Civil War

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Abstract:

The majority of the world's nations have experienced an internal armed conflict since 1960, wreaking untold destruction to life and property. The past decade has witnessed an explosion of economics research into the causes and consequences of civil wars, belatedly bringing the topic into the mainstream of the discipline. This article critically surveys advances in this emerging, interdisciplinary conflict literature and charts productive ways forward for future research. A central theoretical puzzle is why civil wars occur at all given their high human and economic costs; appealing to the Coase Theorem, the two sides to a conflict could bargain to reach a Pareto efficient agreement without fighting. Recent theory argues that bargaining may break down, leading to war, due to either information asymmetries or commitment problems – more precisely, the inability to sign binding contracts in the absence of the rule of law. These theoretical models imply that weak legal institutions and social divisions, as well as low incomes could all contribute to the occurrence of civil war. The availability of new data sources has allowed researchers to investigate the implications of these models, producing empirical advances in this previously understudied area. The most robust empirical finding is the central role of poverty and negative income shocks in generating violent civil conflict. Yet micro-level empirical evidence on the recruitment, organization, and conduct of armed groups remains limited. Another emerging stylized fact is the ability of some economies that suffered heavy war damage to experience rapid recoveries, although it remains unclear how this generalizes across contexts. The article contains a discussion of promising future research directions, necessary data collection strategies, and some tentative policy implications.

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1 Civil war and the study of economics

Internal warfare has been commonplace during the past half-century, a fact that, until recently, largely escaped the notice of the field of economics. Yet a look at the world since 1960 reveals a tremendous amount of violent conflict between the state and domestic armed groups. Civil *wars*, or those internal conflicts that count more than 1,000 battle deaths in a single year, have afflicted over 29% of all nations, while including civil *conflicts*, or those that count at least 25 battle deaths per annum, increases the rate to 56%.[3] This internal warfare is not just extremely common, it is also persistent. Figure 1 displays the cumulative proportion of all nations experiencing wars and conflicts since 1960. Twenty percent of nations have experienced at least 10 years of civil war.

The proportion of countries embroiled in civil war increased steadily through the last half of the 20th century, peaking in the 1990s (See Figure 2). In Sub-Saharan Africa, the world's poorest region, nearly a third of countries had active civil wars or conflicts by the mid-1990s. The prevalence of war prompted political scientists and a growing number of economists to ask a simple question: why there is so much civil war in the world? By 2007, observers began to ask where some of the civil wars had gone; there were just 32 active conflicts in 2006, the result of a steady decline in conflict from a peak of 51 conflicts in 1992.

Poverty is commonly held to be a leading cause of internal wars. Indeed, the relationship between low per capita incomes and higher propensities for internal war is one of the most robust

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[3] Our definitions of war and conflict and data come from the well-known PRIO dataset described and developed by Gleditsch et al. (2002). As we note below, the definition and coding of civil war is contested, but our general points are robust to the use of alternative approaches.

empirical relationships in the literature. Figure 3 illustrates the relationship between per capita income and civil war; countries in the bottom quartile of the world income distribution – many of which are in Africa – have many times more wars than nations in the top quartile, while the middle quartiles still have considerable conflict risk.

This line from poverty to conflict, however, can also be drawn in reverse. Conflicts devastate life, health, and living standards. A chilling example is the Democratic Republic of Congo, where surveys indicate that perhaps 5 million people died as a result of the recent civil war, primarily due to hunger and disease (Roberts et al., 2003) Mortality figures for Rwanda, Angola, and Sudan are likewise shocking. Warfare also destroys physical infrastructure and human capital, as well as social and political institutions. Moreover, internal wars are contagious; refugee flows, lawlessness, and the illicit trades in drugs, arms, and minerals appear to generate "spillover" effects into the countries neighboring conflict zones. The destructive consequences of internal warfare may be so great as to potentially be a factor in the growing income gap between the world's richest and poorest nations.

The paradox, however, is that conflict is also credited for the technological and institutional development that underpins Western wealth and economic development. Both internal and external wars are a commonplace in European history if we extend our analysis back more than sixty years. Several scholars have claimed that war served a critical role in enabling the development of strong and capable government institutions in Europe (e.g. Acemoglu & Robinson, 2006; Tilly, 1975; Tilly, 1992).

Civil war, it is clear, ought to be central to the study of economic development. Yet until a decade ago, economists offered limited contributions to the study of civil war, primarily formal theoretical models. Development economists have likewise overlooked civil conflict; for in-

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stance, two respected and widely taught undergraduate Development Economics textbooks (Ray, 1998; Todaro, 1999) do not contain the words "war", "conflict" or "violence" in their subject index. Moreover, a survey by the authors of 38 different development economics undergraduate course syllabi in leading U.S. universities reveals that only 13% of the courses mention these topics. The proportion covering war, conflict or violence is slightly higher (24%) among the 25 graduate development economics syllabi we surveyed. Nevertheless, it is still the case that few economic development courses seriously cover issues of war and conflict.[4]

Civil war is now moving closer to center stage in economics and development economics in particular; over the past decade, economists, political scientists and others have collaborated to better understand the causes and the economic legacies of internal warfare. This article's main goal is to summarize this progress and help chart a path forward. This literature is increasingly broad, so our survey neglects related but distinct forms of political and non-political violence – including interstate war, terrorism, coups, communal violence, and crime – that may also interact with economic development in important ways. We limit our focus to civil conflicts and wars, moderate to large-scale warfare between the state and armed political actors within its borders.

As befits an emerging field, this article focuses as much on what we cannot say today about armed conflict as upon what we can. In pursuit of the causes of civil war, formal theory has dwelt upon the various rational motives and initial conditions that could foster fighting. Some of these theories—those, for instance, that link conflict to the geographic conditions that favor insurgency—find powerful support in the empirical literature, most of which consists of cross-

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[4] We searched for online course syllabi for undergraduate institutions ranked in the top 50 of the widely used U.S. News and World Report ranking of America's Best Colleges (2007), and for Ph.D. economics programs ranked in the top 25 of either the National Research Council ranking (1995), the Chronicle of Higher Education ranking (2005), or U.S. News and World Report's America's Best Graduate Schools (2007), details available upon request.

country statistical correlations. Yet the most persuasive theory of civil war, one that emphasizes conflict as a bargaining breakdown due to commitment problems, has barely been tested. Surprisingly little of the empirical literature, in fact, is explicitly motivated and derived from theory.

This is beginning to change with the advent of micro-economic studies of armed conflicts and combatants, as well as the growing body of large scale case analyses, but this survey argues that more explicit links between models and data is required. Better data and measurement and continued theoretical progress on central unresolved problems (including explaining armed group cohesion amid collective action problems) deserve further attention as well. One of the most interesting directions for theoretical and empirical research is into the internal organization of armed groups, a field ripe for the concerted application of advances in contract theory, mechanism design, and industrial organization.

Even with so much work to do, the causes of conflict are today much better understood than even a decade ago. An episode of civil war, not its absence, is the norm in most countries, and that war is often the nation's singular historical event, whose effects are felt generations later. Yet what those effects imply for long-run economic development is not entirely clear.

This article tries to bring a unifying economic growth framework to the study of the economic legacies of war. The existing empirical evidence focuses on impacts on capital and population, the basis of economic production, and finds that rapid recovery is possible in several country cases. More persistent economic impacts have been found for human capital, including measures of education, nutrition, health, and productivity in a new applied microeconomic literature using innovative datasets. As the review of the literature below makes apparent, however, there remain many gaps than knowledge in the study of postwar recovery. Empirical evidence is at its weakest in assessing to which the most fundamental drivers of growth—institutions and technology—are

affected by conflict. These institutional effects may be the most crucial determinant of whether a nation recovers or stagnates, perhaps even plunging into war again.

The rest of the paper is organized as follows. Section 2 surveys theoretical advances in the study of armed conflict and points out important directions for future research. Section 3 covers the large empirical literature on the causes of civil conflict at both the macro and micro levels of analysis, while section 4 discusses the smaller but growing literature on civil war's economic consequences. The final section summarizes the key lessons in this literature, briefly touches on some policy implications, and suggests useful data collection strategies to sustain research progress in this field.

2   Theories of armed conflict

Newspaper reports, historical accounts, and econometric work overflow with theories of conflict: ancient hatreds incite violence; oil wealth breeds separatism; trade shocks trigger insurrections; income inequality leads to class warfare. Surveying the vast literature on civil war, one feels caught in a complex web of root and proximate causes. In this context, the principal contribution of formal economic theory has been to clarify and systematize this tangle of explanations. Models from both economics and political science have shown that most accounts of war share a few common logics and mechanisms, each of which can be formalized in a parsimonious framework of self-interested, wealth-maximizing groups or individuals. We first review the seminal theories in the study of revolution, then survey other influential branches of the theoretical literature, and finish up with promising directions for further work.

2.1 Insurrection as competition for resources

Models of armed conflict depart from standard economic theory in at least three ways: property rights are not well-defined or automatically enforced, contracts between parties cannot be enforced, and rulers can be replaced by means other than the ballot box. In this setting of near anarchy, insurrection, predation and defense become alternatives to directly productive activities.

The contest model, the workhorse of the formal conflict literature, originated with Haavelmo (1954), and was rediscovered by Hirshleifer (1988, 1989), Garfinkel (1990), and Skaperdas (1992). It considers two competing parties, a rebel group and a government, and analyzes each side's allocation of resources to production or appropriation; Garfinkel and Skaperdas (2007) provide a detailed review of the permutations and mechanics of this two-party, general equilibrium framework. Production is modeled in the standard manner, and appropriation is modeled using a 'contest success function' where inputs (e.g. guns) translate into a probability of "winning" and consuming the opponent's economic production in addition to your own.

These models treat rebels and rulers as unitary actors. Grossman (1991) departs slightly, considering the case of a single ruler and many infinitesimal citizens, each of whom can gain from either production or participating in revolution.[5] Grossman's move from unitary actors to representative households (assumed unable to coordinate their activities) does not greatly change the conclusions of the contest model, but it does highlight the importance of the individual's participation problem: armed group leaders must motivate citizens to soldier for their side. Participation becomes easier to motivate the lower is citizens' opportunity cost of fighting, and so these models predict that the amount of citizens' time devoted to fighting increases as the returns to fight-

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[5] Another version considers a revolutionary leader of exogenous skill who competes with the ruler for citizen support (Grossman, 1999).

ing rise relative to the returns to productive activity, generating what has become a central hypothesis in recent empirical work.

Can this hypothesized link between citizen living standards and fighting account for the cross-country relationship between poverty and civil war documented in the introduction? In fact, the theoretical connection between wealth and armed conflict is not so clear cut. In contest models the winning party consumes the resources both of the state and of the losers. Intuitively, the greater the national wealth (whether from taxes, assets like natural resources, or external transfers), the more there is to fight over and thus, in standard formulations, the greater the equilibrium effort devoted to fighting rather than producing (e.g. Garfinkel & Skaperdas, 2007; Grossman, 1999). Poverty makes production less attractive than fighting, but also means there is a smaller pie to fight over. Echoing Grossman (1992), Fearon (2007) points out that these opposing wealth effects can cancel out in some cases: if state revenues are drawn entirely from taxes on citizen incomes, then income would have no effect on equilibrium levels of conflict with risk neutral agents; positive or negative income effects are immediate, though, if utility or revenue collection have nonlinear functional forms.

This discussion suggests that the income distribution is central in explaining the economic incentives for rebellion. State wealth must be easily appropriated or divorced from the citizenry, as with some natural resource wealth and aid flows Alternatively, assets and income could be unequally distributed among citizens or sectors, (Dal Bó & Dal Bó, 2008). While their paper is an important step towards incorporating heterogeneous agents into the analysis, as discussed further below, a general theoretical model that specifies the relationship between income distribution and civil conflict has yet to be developed, and this remains an important direction for future theo-

retical research.[6]

A clearer prediction of contest models is that the time and resources devoted to insurrection (or state suppression) increase with the relative effectiveness of that side's fighting technology. Technology is defined broadly in this literature, including any factor that influences effectiveness—skillful revolutionary leaders, access to firearms and training, rugged terrain, or bases on foreign soil. As we will see, this feature of the model receives broad empirical support.

Note that in pure contest models insurrection is never fully deterred, except when the insurrection technology is exceptionally weak or if there is some non-convexity in the rebellion technology (due to the fixed costs of organizing an armed group, say). This prediction of ever-present conflict is unsatisfying, since political competition over power and resources is endemic while violent conflict, while widespread, is far from ubiquitous. Theorists have thus turned to the political determinants of compromise and its occasional breakdown.

2.2 Why fight? Information asymmetry and incomplete contracting

Arming is costly and wars are destructive and risky. Thus one of the fundamental questions in the theoretical conflict literature is why wars ever occur at all. If the competing groups are rational, both should presumably prefer a bargained solution to destructive conflict.

The possibility of bargaining under the threat of violence is embedded in leading theories of political and institutional development.[7] Acemoglu and Robinson (2001, 2006), for instance, de-

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[6] Some important recent papers on the link between income inequality and economic performance include Benabou (2000), and Banerjee and Duflo (2003), among many others.

[7] Bargaining models of conflict proceed from microeconomic theories of bargaining where parties have the option of resorting to costly conflict if bargaining breaks down (see Kennan & Wilson, 1993 for a comprehensive survey). Union-firm wage negotiation and pre-trial legal settlement in wealthy countries have been the two most studied cases. Conflict models, however, do not assume that contracts will be enforced once signed.

velop a model of elites competing with the poor for control of the state. Elites accommodate the poor by extending the franchise in periods when the poor can credibly threaten to revolt, and there is no violent conflict on the equilibrium path.[8]

Fearon (1995) famously outlined three reasons why bargaining could fail, leading to war. First, leaders may not always behave rationally—decisions might be based on emotion, or leaders may not be able to fully calculate costs and risks. Second, leaders may be rational but do not internalize the full cost of conflict because of political agency problems. Third, leaders might be rational and internalize the risks and costs of war, but find war unavoidable nonetheless.

Building on this third explanation, Fearon highlights three mechanisms consistent with "rational war": (i) *imperfect information*, including private information about military strength, and the strategic incentive to misrepresent it to potential opponents; (ii) *commitment problems*, especially the inability of the parties to commit to deals in the absence of a third-party enforcer; and (iii) *issue indivisibilities*, whereby some issues do not admit compromise. We will follow the literature and focus attention on the first two.[9]

Information asymmetries

War can occur when one side overestimates its ability to win, or underestimates its opponent's strength and willingness to fight (Powell, 2002). But imperfect information is generally insuffi-

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[8] Conflict breaks out in their framework only when it is axiomatically assumed: that is, when elites are allowed to employ repression, but repression is assumed to fail and cause revolt with some probability.

[9] Issue indivisibilities are considered a relatively minor explanation in most cases. However, Hassner (2003) argues that the indivisibility of sacred spaces may be one reason for the persistence of conflict between Israelis and Palestinians or Hindus and Muslims in India. Other indivisibilities may include contentious social issues (e.g. abortion) or the identity of an autocratic leader. Powell (2006) argues, however, that indivisibilities are merely a special case of the commitment problem if side payments among groups are possible.

cient cause for war. After all, if both parties have an incentive to find a bargain, they also have incentives to gather information and communicate their strengths (Fearon, 1995). Thus for information asymmetries to cause war among rational actors, accurate disclosure of information must also be impaired. An incentive to misrepresent one's strength is the most commonly theorized mechanism, such as when a state exaggerates its strength and engages in (inefficient) war in order to deter future groups from insurrection. To take an interstate war case as an example, it can be argued that Saddam Hussein's carefully cultivated exaggeration of Iraq's stock of weapons of mass destruction was an effort to mislead opponents and deter invasion—an effort that, nevertheless, failed).

Such informational accounts are plausible, but likely offer only half an explanation. For one, relative military strength should reveal itself fairly quickly, and so imperfect information provides a poor account of prolonged civil conflicts we observe in the past half-century. Furthermore, historical cases of imperfect information leading to conflict appear rare (Fearon, 2004; Powell, 2006).

Chassang and Padro-i-Miquel's (2008) work incorporates information asymmetry into a contest model employing a global games logic (Morris & Shin, 1998). They introduce transient economic shocks that reduce the immediate opportunity cost of fighting but not the net present value of victory. The model implies that in dire economic circumstances, groups predate upon one another since they have less to lose than in periods where the returns to production are higher. Yet even in better economic times, conflict is still possible because of the combination of imperfect information about underlying economic conditions and first-strike advantages on the battlefield, which generate mutual fears of preemptive attacks by the opponent. The model generates clear theoretical predictions that can be taken to the data: armed civil conflicts should follow negative

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economic shocks; higher and less volatile national incomes are associated with less civil conflict; and expected future income growth reduces the chance of conflict today, by raising the net present value of maintaining the peace (since part of the pie would be destroyed by fighting). We discuss the existing empirical evidence on some of these issues below, although more research is needed to more fully test the implications of this promising new theoretical framework.

Commitment problems and incomplete contracting

The most promising theories of revolution and civil war focus on the cases where credible commitments to peace or redistribution cannot be made, even with complete information—that is, at least one side faces an incentive to renege once a settlement is reached. Such circumstances include military scenarios with a first-strike advantage, and instances where waging war today can prevent one's opponent from gaining military strength in the future.

Powell (2006) shows formally that each of these commitment problems is rooted in a single phenomenon: large shifts in the future distribution of power. For a leading example, consider a temporarily weak government that is attempting to "buy off" a strong rebel group with transfers to secure peace. When the state returns to relative strength – perhaps because of a rebound in economic activity, foreign aid or commodity revenues – it will face incentives to renege on its earlier bargain, thus limiting the amount it can credibly promise to the rebel group today. If this time consistent but lower transfer is less than what the rebels can gain by fighting today, they will wage war now to lock in the highest possible payoff.

Similarly, a commitment problem arises when one party can permanently alter the strategic balance of power by waging war now (McBride & Skaperdas, 2008; Powell, 2006). If going to war weakens or even eliminates a rebel group for all time, the state will gain a peace dividend

since it no longer needs to invest in arms to deter future conflict. This provides a rationale for the state to wage bloody but temporary conflicts if peace deals are not credible.

The commitment problem suggests that civil war is more likely to occur when there are limits to conflict resolution and contract enforcement. Since formal legal and state institutions presumably help to enforce commitments intertemporally, societies with weak government institutions and few checks and balances on executive power should empirically be those most likely to experience violent civil conflict (e.g. Fearon & Laitin, 2003; Skaperdas, 2008). This relationship may partially explain the widespread occurrence of lengthy civil wars in Sub-Saharan Africa, a region notorious for its weak state capacity and limited legal infrastructure (Herbst, 2000).

This view has important empirical and policy implications. This 'weak state' hypothesis is often tested by including a proxy for institutional strength or capacity in a conflict onset or incidence regression (e.g. Fearon & Laitin, 2003). Yet note that weak institutions and the absence of a third-party enforcer alone are insufficient for civil conflict. The theory implies that conflict is at least twice conditional: first on weak institutions, and second, on future shifts in relative power across the fighting sides. Future empirical models must begin to take this second issue more seriously in testing.

In terms of policy, the theory suggests that enforcement of contracts by the international community can potentially substitute for weak domestic institutions. Interventions might include armed peacekeepers, the provision of guaranteed financial transfers to rebels by outside international agencies, and the threat of punishment (including trade sanctions, asset freezes, and strategic bombing) if the government reneges on the peace deal.

External interventions could also have the opposite effect, however, and prevent an ongoing war from reaching a credible peace agreement. For instance, the recent prosecution of Charles

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Taylor (former warlord and President of Liberia) and indictment of Joseph Kony (head of Uganda's Lord's Resistance Army) by international courts could make post-war power-sharing (and rent-sharing) deals for rebels less credible in the future, and thus extend current civil wars. On the other hand, the possibility that the international indictment could be dropped appears to have been one of the primary incentives for Kony to agree to a ceasefire and negotiate peace. Clearly the contracts and incentives provided by international justice efforts are important and complex, and, along with domestic institutional factors, await further study.

2.3 The micro-foundations of group conflict

The theoretical explanations of war we have reviewed depend upon groups behaving as unitary actors, a strong assumption considering the well-known problem of collective action (Olson, 1971). Since a solution to the collective action problem is a precondition for waging war as a coherent armed group, understanding the determinants of successful group formation is crucial to understanding civil war. Even so, a unified and systematic micro-foundation for individual participation in such groups has yet to be developed.

The problem of individual participation in armed groups

Classic solutions to the collective action problem use 'selective incentives' to motivate participation, with material and pecuniary incentives the focus of most models (e.g. Grossman, 1999). Such incentives include wages, opportunities to loot, promises of future reward, or physical protection from harm. Economic inequality can thus provide a motive for conflict to the extent that seizure of the state brings material gains to the victors (Fearon, 2007).

A literature on agrarian revolutions in the 1960s and 1970s, however, instead argues that inequality motivates participation in rebellion not because of private gain, but because it generates

frustration over the destabilization of traditional social systems and exclusion from the economic benefits of modernization (Gurr, 1971; Paige, 1975; Scott, 1976). It is these emotions that provide the impetus for individual action. Other studies suggest that a leader's charisma, or a citizen's own ideology, moral outrage, and desire for vengeance can also help solve the problem of collective action in rebellion (e.g. Roemer, 1985; Wood, 2003). A convenient way of modeling such grievances in a rational framework is as 'goods' of inherent value that individuals consume by fighting. The approach closely parallels a body of theory and evidence in the voting literature that suggests the collective action problem inherent in democratic elections is overcome by the value some individuals place on the act of voting itself (Dhillon & Peralta, 2002; Feddersen, 2004).

Such diverse selective incentives—pecuniary or not—are easily embedded in a principal-agent framework. A leading example is Gates (2002), who models how rebel leaders can use material incentives alongside ethnic ideology to motivate citizens to join and exert effort in the rebellion (i.e. satisfy the participation and incentive compatibility constraints).[10] Yet while this consumption approach to grievances is analytically convenient, it is unlikely to capture all the complex individual motivations underlying participation in armed groups, and thus constitutes an important area for further theory. For instance, the large body of theory within corporate finance on how divergent goals and information are accommodated within organizations (Tirole 2005) has yet to be applied to the study of armed groups.

The formation of competing coalitions

The models reviewed assume that rebel and government groups exist and are actively engaged

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[10] Incentives need not be limited to rewards. Chwe (1990) formally models the use of pain in a principal agent-framework..

in combat. They do not tackle the issue of how competing groups form and why they cohere. An emerging literature based on the non-cooperative theory of endogenous coalition structures explores group formation in distributional conflict. These models typically assume that group production and appropriation is more efficient than individual action, providing citizens with an incentive to join forces. These models also allow for conflict within each group over the distribution of their joint product, conflict which can be costly for the individual. Stable groups are those that have low-cost mechanisms for distributing the gains, such as a system of property rights. The size of stable groups essentially depends on the relative effectiveness of groups at managing both inter-group and intra-group conflict (e.g. Bloch, Sánchez-Pagés, & Soubeyran, 2006; Garfinkel, 2004).

This approach is a promising source of micro-foundations for the broader commitment problem discussed above, since the institutions that allow for cooperation within groups may also facilitate credible commitments and mitigate inter-group conflict. Relaxing the unitary actor assumption could also expand the range of rational explanations for armed conflict. For instance, imperfect information within groups could lead to bargaining breakdowns (just as was the case for imperfect information across groups). Field generals might have incentives to mislead their civilian leaders about the strength and capability of their military forces, for example, if they hope to keep the fighting going for longer than most citizens (to keep military budgets at high levels, for instance).

Alternatively, the possibility that groups may split could exacerbate commitment problems: signing a peace deal with the leader of a rebel group is of limited value if group hard-liners are able to secede and continue fighting. The existence of splinter factions may explain the reluctance of fighting sides to enter into peace talks and cause such talks to fail. Stedman (1997) ar-

gues that the greatest source of risk in peace negotiations comes from 'spoilers': "leaders and parties who believe that peace emerging from negotiations threatens their power, worldview, and interests, and use violence to undermine attempts to achieve it." (p.5). We are not aware, however, of attempts to formally model such dynamics within armed groups.

Moreover, attempts to model group formation continue to rely on material incentives to overcome collective action problems. Formal theories of group formation have yet to seriously consider alternative incentives, motivations, and determinants of solidarity and splintering, with the noteworthy exception of ethnicity.

Ethnic groups and conflict

Ethnic nationalism is popularly viewed as *the* leading source of group cohesion and (by extension) inter-group conflict; of 709 minority ethnic groups identified around the world, at least 100 had members engage in an ethnically-based rebellion against the state during 1945 to 1998 (Fearon, 2006). But why do ethnic groups form, cohere, and sometimes engage in such violence? A full review of the literature on the formation of ethnicity and ethnic conflict is beyond this paper, but an outline of the main ideas merits discussion.[11]

'Primordialist' arguments stress the deep cultural, biological or psychological nature of ethnic cleavages, whereby conflict is rooted in intense emotional reactions and feelings of mutual threat (Horowitz, 1985). Economic models that assume individuals prefer to mingle with co-ethnics (or share preferences over political issues and public goods) might be construed as primordialist in nature (e.g. Alesina & La Ferrara, 2000; Esteban & Ray, 1999). There are clear parallels to the models of group formation discussed above: co-ethnic preferences can augment intra-group me-

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[11] For an overview of ethnic mobilization and violence see Laitin (2007) and Fearon (2006). For a review of ethnic organization and the relationship with economic performance, see Alesina and La Ferrara (2005).

chanisms of communication and cooperation, while interethnic animosities exacerbate information and commitment problems.[12]

Ethnicity may also facilitate strategic coordination and enforcement. Ethnic groups often exhibit dense social networks and low cost information and sanctioning, and may have identifiable characteristics that allow outsiders to be excluded from public goods (Caselli & Coleman, 2006; Fearon & Laitin, 1996; Miguel & Gugerty, 2005). Alesina and La Ferrara (2005) also speculate that ethnically homogenous groups possess a production advantage that augments their incentives to associate. Similarly, Bates (1986) suggests that shared language and customs facilitate organization.

Finally, 'modernist' theories of ethnic conflict stress that conflict arises when groups excluded from social and political power begin to experience economic modernization (Bates, 1986; Fearon & Laitin, 2003; Gellner, 1983)—a situation that parallels Powell's (2006) account of rapid shifts in power leading to bargaining breakdowns.

2.4 Challenges and areas for further development

Many disputes that might lead to armed conflict are (thankfully) quickly settled, even among antagonistic ethnic groups. Thus the theoretical apparatus described above is plausible: conflict is rooted in endemic competition for resources across groups, with bargained solutions occasionally breaking down because of commitment problems or imperfect information. Persuasive

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[12] Alternatively, as with the grievances discussed above, ethnic violence might have inherent value and be treated as consumption. In the extreme case, we could even reject the rationalist assumption that opposing groups prefer to reach a bargained solution rather than fight. However, we believe the goals of formal economic theory in this area should go beyond simply assuming that a taste for violence drives civil conflict, to uncover the deeper economic and social factors behind the violence.

though this framework may be in most circumstances, there remain many challenges and areas for further theoretical investigation.

Disentangling competing accounts

Existing formal theories of conflict yield falsifiable predictions, but few articulate the empirical tests that would distinguish them from alternative mechanisms. Income volatility is one example. In the theories we consider above, a negative aggregate income shock is associated with an increase in armed conflict in various models, including those that emphasize the diminished opportunity costs of soldiering (Gates, 2002), weaker state capacity (Fearon & Laitin, 2003), or the role of imperfect information (Chassang & Padro-i-Miquel, 2008). Meanwhile, a negative aggregate income shock is associated with a *decrease* in conflict risk in models that stress capturing the state and its revenues as a prize (e.g. Garfinkel & Skaperdas, 2007; Grossman, 1999). Finally, income volatility or uncertainty in either direction could inhibit credible bargaining and commitments if it is associated with rapid shifts in power across groups (Powell, 2006), or gives rise to worse information about current economic conditions (Chassang & Padro-i-Miquel, 2008).

Few theories model more than one of these dynamics at a time or identify the empirical predictions that will distinguish between competing accounts and channels. Important exceptions are Dal Bó and Dal Bó (2008) and Dube and Vargasz (2007), who develop an integrated contest model building that distinguishes between shocks to different economic sectors. Increases in the price of *capital*-intensive commodities increases government revenue and the value of capturing the state, and thus increases predation by armed groups. Increases in the price of *labor*-intensive commodities, however, increase the individual opportunity cost of fighting, and thus lead to less

conflict.

These theories are a marked improvement over single-sector models. Even so, alternative mechanisms and interpretations are still possible. For instance, if higher capital-intensive good prices fail to increase conflict, it might be because greater state capacity (associated with more government revenue) dominates the state-as-prize effect. If civil war is the result of a bargaining breakdown, there are good theoretical reasons to believe that events such as price shocks have differential effects on civil conflict depending on the local institutional setting and the possibility of future shifts in power across political groups. Future models should help us identify the empirical patterns that distinguish between alternative accounts and mechanisms. We revisit this point in the discussion of empirical findings below.

Understanding grievances

At present, the economic motivations for conflict are better theorized than psychological or sociological factors. Individual preferences in existing models typically include only material rewards and punishments. One result is that we have not derived from theory the falsifiable predictions that distinguish between material and non-material theoretical accounts. Take the role of economic inequality, for example. The unequal distribution of resources can generate material incentives for a group to seize control of the state. More than one historical account, however, emphasizes citizens' emotional and ideological outrage over inequality as a prime motivation for engaging in collective action.[13] While the reduced form prediction that inequality leads to armed conflict is unchanged in either case, the relationship could be interpreted as evidence of either "greed" (economic motivations) or "grievance".

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[13] Barrington Moore (1993), for instance, has argued that Nazi fascism and anti-capitalist rhetoric stirred anger in German peasants, anger over the perceived control of land and resources by a hostile (and supposedly Jewish) elite.

Cramer (2002) critiques the conflict literature for the tendency to use such reduced-form empirical relationships to justify economic interpretations, when he believes the underlying relationships between economic, social, and psychological issues are far more complex. He stresses Gramsci's (1971) definition of 'economism': presenting causes as immediately operative that in fact only operate indirectly, and thus overestimating causation. Understanding these complex relationships is crucially important for preventing armed conflicts and solving collective action problems. Innovative ways of modeling and measuring individual political grievances are required to make progress on this agenda. We see at least two promising and related areas for further theoretical development and empirical investigation: the role of non-material incentives for collective action; and investigating the basis for armed group formation.

Disaggregating institutions

The commitment problem is perhaps the most persuasive theoretical argument for why civil wars occur. Unfortunately, the specific political and legal institutions capable of enforcing commitments and facilitating compromise—between as well as within armed groups – remain poorly understood and measured.

In a study of the civil conflict in Liberia, Sierra Leone, and Guinea, Sawyer (2004, 2005) identifies the absence of checks and balances on the executive, including both local-level and cross-border institutions, as the primary cause of war and instability in those nations. Other theories emphasize the importance of market promotion and tax levying (Besley & Persson, 2008), property rights and the rule of law (Garfinkel, 2004), and the role of international institutions and the threat of external intervention could also be critical. Meanwhile, Powell (2006) emphasizes the role of institutions that help manage rapid shifts in power, an example of which might be the

ability of elites to move extend or retract the democratic franchise as needed, as in the models of political development by Acemoglu and Robinson (2001, 2006).

It is also not always clear what is meant by 'institutions' in recent development economics research. The concept needs to be better disaggregated, rationalized, and tested to make progress in the civil war literature. Most importantly, we need to better understand how societies move from anarchy to the institutions that really matter for keeping the peace.[14] Each of these questions is a priority for future theoretical and empirical research in development economics and economic history more broadly. There is still too little rigorous theoretical modeling or empirical evidence on when leaders choose to invest in the rule of law.

Some raw material needed for the rigorous modeling of institutions and conflict can be found in the growing case and comparative politics literature.[15] For example, Amos Sawyer (2004, 2005) and William Reno (1999) each examine the internal dynamics of weak states and decline in Sierra Leone, Nigeria, the Democratic Republic of Congo, Guinea, and Liberia. Sawyer emphasizes the role of unchecked executive power in destabilizing regimes and even whole regions, while Reno describes a tipping point from institutional stability to spiraling state fragility and the creation of 'warlord states': under certain conditions, strongmen rulers may find it optimal to de-institutionalize the state and formal bureaucratic mechanisms in favor of a parallel "shadow state" devoted to predation and rent-seeking that they personally control.

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[14] Besley and Persson (2008) is a useful step in this direction. Building on historical evidence that interstate war has led to long run state development (Herbst, 2000; Tilly, 1992), they argue that the threat of external conflict gives states the incentive to invest in institutions that promote markets and taxes, while the threat of internal war undermines such incentives to invest in institutional development and results in reduced in state capacity.

[15] The comparative method is a standard tool of political science and involves the systematic and in-depth comparison of a small number of cases (Lijphart, 1971). It is a complement to experimental and statistical techniques.

The conduct and organization of civil war

Another promising area of study is the conduct and organization of rebellion, investigating what factors and initial conditions influence a group's recruitment strategies, fighting tactics, and internal organization. Its object should be to describe the logic inherent in civil war and violence, in reaction to the view, popularized by journalism and some international relations scholars, that the brutal violence that characterizes modern civil warfare is a product of illogical barbarism un-restrained by economic, political or social structures (e.g. Kaldor, 1999; Kaplan, 1994).

One emerging strand of research applies contract theory to theories of recruitment. For instance, Gates (2002) models participation and allegiance as a principal-agent problem where the incentives and methods of recruitment vary with ease of supervision; the greater the distance — whether geographic or social—between the leader and the recruit, the more difficult is supervision and punishment, and the more likely that material incentives (e.g. looting) will need to be offered to recruits to secure their cooperation.

In a similar vein, Weinstein (2005, 2007) employs a game-theoretic logic in a non-formal model to explain how a rebel group's resource base shapes its composition and tactics. He argues that groups rich in material resources are flooded with opportunistic joiners with little commitment to the civilian population, while armed organizations poor in wealth but rich in ideological and social "resources", like a strong sense of identity or purpose, tend to run more disciplined forces that attract and cultivate more committed soldiers.[16] Building on these papers, Beber and Blattman (2008) demonstrate that, when an armed group's material resources are limited, rebel

[16] The contrast between the Revolutionary United Front (RUF), who were funded through diamond mining and smuggling, versus the community supported Civilian Defense Forces (CDF) in Sierra Leone's recent civil war provides an illustration of this divergence. Smith et al. (2004) show that the RUF was much more likely to commit human rights abuses against civilians than the CDF.

recruiters will selectively target civilians that are most responsive to coercion.

Economic theory can also help us understand the patterns of rebel organization and action we observe. For instance, Fearon (2007) asks why we tend to see the sustained survival of many small and lightly-armed guerrilla groups, each with little chance of capturing political power (Congo, Uganda and Sudan are important examples). He constructs a contest success function with decreasing returns to scale for rebels over some size range—in other words, above some size, each additional rebel increases the probability the rebel group is detected, denounced, or destroyed by the government, and this effect outweighs the fighting benefits of larger size (at least up to some point).[17] Powell (2008) is perhaps the best articulated formal attempt to get inside the black box of armed groups' fighting strategy. He models optimal military spending across potential targets (e.g., cities or fighting units) by a government fearing rebel attack, and is able to decompose such spending into a defensive effect, a deterrence effect, and a cost effect.

A related literature that falls somewhat outside the scope of this survey investigates the logic and organization of terrorism, including: self-selection and screening of terrorist recruits (Bueno de Mesquita, 2005); why radical religious clubs specialize in suicide attacks (Berman & Laitin, 2008); the economic logic of hostage-taking and government response (Sandler & Enders, 2004); the structural and strategic factors that affect the splintering and ideology of terrorist groups (Bueno de Mesquita, 2007); and the circumstances under which terrorists employ roadside bombs (Hanson, 2008).

Finally, other models help to explain rebel practices such as violence and looting explicitly directed at civilians. Azam (2002, 2006) formalizes a strategic logic whereby an armed group en-

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[17] The sensitivity of results to such functional form assumptions calls out for more research investigating the micro-foundations of contest success functions.

gages in looting to reduce the opportunity cost of non-military labor effort for potential recruits (thus making them more likely to join the group), while simultaneously generating spoils to reward and retain existing recruits. The logic of civilian violence is the subject of a growing literature in political science (see Kalyvas, 2006 for a review). For instance, based on a rich comparative study of civil wars in the past century, Kalyvas (2006) argues that insurgent groups prefer to use selective rather than indiscriminate violence to punish "defectors", or civilian enemies and informers. In the absence of their own information on who is a defector, insurgents rely on loyal citizens to denounce others. Kalyvas argues that defection, denunciation, and violence are maximized in 'contested' zones of control—where both the government and the insurgent operate. When insurgent control is secure, defection is less likely to occur, denunciations are few (and likely to be false), and so the killings of civilians are fewer in number.[18]

This collection of theories just scratches the surface of the recruitment and organization of warfare. This area remains one of the most promising and understudied areas in the literature on conflict, and is ripe for the application of advances in contract theory, corporate finance, behavioral economics and industrial organization theory.

Idiosyncratic explanations for civil war

Formal theories of behavior are seldom intended to be deterministic, but rather to describe general tendencies. Thus it is conceivable that some civil wars at least are the result not of the failures formalized in economic models of conflict, but rather of idiosyncratic deviations from the model.

Indeed, as we discuss in the following section, existing empirical models of conflict have lim-

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[18] Moreover, denunciations will tend to be associated with pre-existing rivalries and enmities within the population as civilians face the incentive to denounce most when there are private scores to settle.

ited explanatory and predictive power. We can draw at least three possible conclusions from this relatively weak empirical performance. First, the determinants of war could be rational and structural but simply difficult to observe or measure. In this case our prime focus as researchers should be upon improving data and measurement – and to some extent this is already happening. Second, war could have purely idiosyncratic causes, attributable to chance or to unpredictable 'irrational' behaviors by leaders encompassing bounded rationality, errors in decision-making, leader personality defects, and so on (Gartzke, 2003). In this case, formal theory should more explicitly allow for more idiosyncrasies.[19] Third, wars could have determinants that are outside the existing economic frameworks but systematically so—e.g., predictable errors in decision-making, such as overestimation of one side's chances of winning, a failure among decision-makers to internalize the full social costs of war, and so forth. In this case, the economic theory of conflict may be fertile ground for new advances in theoretical behavioral economics (psychology and economics). Yet we are not aware of any efforts to push formal theories of armed conflict in these new directions, beyond standard rationalist explanations.

One indication that structural and institutional factors are not the only determinants of civil war is new empirical evidence that political leaders matter. Jones and Olken (2007) compare successful to failed assassination attempts, and find that the unexpected assassination of leaders tends to enflame low-scale conflicts and diminish high-intensity conflicts. Similarly, the unexpected death of rebel leader Jonas Savimbi is generally perceived as the even causing Angola's war to end, so much so that Guidolin and La Ferrara (2007) use his death in an event study of

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[19] Some models allow for unexpected economic shocks, but players in these interactions often take action after the shock is observed. Under uncertainty, war could be the result of a conscious gamble by one party. In the model of political transitions by Acemoglu & Robinson (2001, 2006), elites can choose to repress the poor, but there is a fixed probability that repression fails and that a civil war occurs.

war's termination on diamond company stock returns. Historians commonly attribute the march to events, including matters of war or peace, to the individual personalities of influential leaders like Nelson Mandela, Yasser Arafat or Mahatma Gandhi. While we feel that economic theory should probably refrain from pinning too much on personalities, the econometric evidence cited above means that leadership cannot be entirely ignored.

There is much more that has been learned about the empirical causes of civil wars that should ultimately enter into theoretical work. The leaders example above suggests that certain determinants of conflict typically outside our models are observable and testable, and thus could be used to theory. We now turn to the existing evidence and make specific recommendations for moving forward.

3   Evidence on the causes of conflict

We believe that a primary goal of empirical work—micro and macro, quantitative and qualitative—should be to determine which of the competing theoretical mechanisms discussed above are most empirically relevant at predicting the occurrence of civil war. While there has been an explosion of recent research, this goal is far from reached.[20] The existing empirical literature has identified a number of robust correlates of civil war. This maturing literature has yielded important insights: for instance that civil war is more likely to occur in countries that are poor and following certain negative income shocks, in countries with weak or corrupt state institutions, with sparsely populated peripheral regions, with mountainous and forested terrain, and with high-value lootable resources. Yet too often the theoretical mechanisms at work remain obscured.

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[20] Other recent reviews of this empirical literature spanning economics and political science include Humphreys (2003), Justino (2007) and Kalyvas (2007).

We also have limited empirical evidence on the relative influence of the commitment problems and imperfect information that formal theory identifies as the key underlying causes of civil war. Nor has empirical work solved the puzzles of individual participation and within-group collective action laid out above. While case studies generally argue that ideology and grievances matter in motivating individual decision-making, the existing econometric literature has yet to find a single proxy for social and ideological factors that robustly predicts rebellion. Many fundamental questions in both the cross-country and household-level studies of armed civil conflict and war thus remain open for further research.

3.1 Cross-country evidence

Cross-country regressions dominate recent empirical work on conflict. The typical study develops an indicator for war onset or incidence, gathers proxies for possible causes, and runs a horse race between competing determinants.

Seminal work on the causes of civil war

No discussion of civil war empirics is complete without a reference to the contributions of Collier and Hoeffler (1998, 2004) and Fearon and Laitin (2003). Collier and Hoeffler ignited interest among economists – and heated disagreement among many civil war scholars in other fields – with a simple argument: political grievances are universal but the economic circumstances to rebel are not. Their cross-country empirical model is loosely rooted in a contest model of conflict, and with it they find several variables that are robustly and positively correlated with the incidence of conflict. First, slower economic growth in a preceding five-year period is associated with higher current conflict risk, as is a higher proportion of natural resources in total exports. Higher levels of secondary school attainment in the population, moreover, are associated

with a lower risk of civil war. Meanwhile, a country's ethnic fractionalization, income inequality, and democracy are not robustly statistically significant predictors of conflict risk. Collier and Hoeffler conclude that the ability to organize and finance a rebellion – as captured in their economic growth and schooling variables, and the ability to exploit natural resources to fund a rebellion – predicts whether civil war occurs, the determinants of which are primarily economic in nature.

Fearon and Laitin (2003) take a similar cross-country approach and, like Collier and Hoeffler, find first that conditions favoring insurgency, like rough terrain and large populations, increase the likelihood of civil war, and second that proxies for political 'grievances' (e.g. ethnic and cultural diversity) are poor predictors of war's incidence. Yet Fearon and Laitin also argue that measures of state institutional capacity and strength -- including per capita income and indicators for recent changes in regime type -- are robust predictors of civil war. They conclude that war is engendered by weak central governments and environmental conditions favoring insurgents.

How do these two papers reach different conclusions with similar data and econometric techniques? Inconsistent results and interpretations are emblematic of the existing literature on conflict causes, and are worth reviewing in more detail. First, and most importantly, these two studies attach quite different interpretations to variables like per capita income. Collier and Hoeffler link it to the opportunity cost of rebellion facing potential rebels, while Fearon and Laitin emphasize state weakness. Yet neither of these two "pure" interpretations is entirely justified given the evidence at hand. The link between income levels and armed conflict is theoretically complex, and finer-grained data—say, on incomes that revert to the state versus the citizenry, or actual measures of state military strength – is required to distinguish between these interpretations.

Second, scholars have differed in how they code civil wars, with sometimes important impli-

cations for the analysis. Some examine conflict *onset* (dropping years of ongoing war from the analysis and focusing solely on the peace to war transition) while others use conflict *incidence* (including all years of war in the analysis). More importantly, at least four different war datasets are commonly employed, with correlation coefficients that range from 0.96 down to 0.42 (with an average of 0.68).[21] Such discrepancies are striking and beg the question of how such extensive disagreement is possible. Sambanis (2004) examines the four measures and attributes their differences to divergences in: (i) thresholds of violence required to be defined as a civil war; (ii) definitions of war beginnings and endings; (iii) treatment of 'internationalized' civil war (where there is some involvement by outside parties); (iv) treatment of related forms of conflict (e.g. communal violence or state suppression); and (v) underlying data sources.

A third source of inconsistent results is the ad hoc nature of most empirical models, with little agreement on the correct specification. In this way the cross-country conflict literature mirrors that on the causes of economic growth (e.g. Levine & Renelt, 1992). For example, authors vary in their use of annual versus five-year periods, corrections for time dependence, the treatment of ongoing civil war years, the appropriate estimator for relatively rare events, the use of country fixed effects, and so forth.[22] The Fearon and Laitin (2003) specification is perhaps the most widely emulated (e.g. Havard Hegre & Sambanis, 2006; Ross, 2006). Yet their empirical model is not explicitly derived from theory and includes a number of endogenous variables (such as recent economic growth rates), and does not account for the potential time dependence of conflict.

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[21] See Sambanis (2004, p. 832). The four most common datasets employed include: the Correlates of War (COW) project (Singer & Small, 1994), Fearon and Laitin (2003), the PRIO dataset (N. P. Gleditsch et al., 2002), and Sambanis' own dataset (2004).

[22] One time-dependence and dynamics see (Beck & Katz, 2004; Beck, Katz , & Tucker, 1998); on logistic regression with rare events data (King & Zeng, 2001). For other issues, see the discussion in Hegre and Sambanis (2006).

Fourth, estimates and conclusions tend to be sensitive to the particular explanatory variables employed in any given specification. Hegre and Sambanis (2006) test the sensitivity of estimates to changes in the independent variables included and the way common concepts are transformed into measures. Using the approach popularized in Sala-i-Martin (1997), the authors identify a handful of robust correlates of civil war onset: low per capita income, slow income growth, large population size, recent political instability, small militaries, rough terrain, and war-prone neighbors. This list already makes it clear that endogeneity and omitted variable bias are serious concern for pinpointing causal factors.

Recent advances and innovations

Much recent research has focused on improving causal identification, measurement and interpretation of results in the cross-country conflict literature, pushing out the research frontier and providing more conclusive evidence on the causes of armed civil conflict. These methodological improvements hold more promise still, and remain productive directions for future research.

The search for exogeneity. The correlations of civil conflict with both income levels and transitory income shocks are arguably the most robust empirical patterns in the literature cited above, but the direction of causality remains contested. Even the use of lagged national income growth (as in these earlier studies) does not eliminate this concern, since the anticipation of future political instability and conflict can affect investment behavior and thus living standards (for a discussion of this theoretical point, see Chassang and Padro-i-Miquel 2008).

To address this concern, Miguel, Satyanath and Sergenti (2004) identify an exogenous source of variation in incomes in Sub-Saharan Africa: rainfall shocks. Falling rainfall levels proxy for drought, and lead to large reductions in income in Africa, where most households rely on rain-

fed agriculture.[23] Using rainfall growth rates as an instrumental variable for per capita income, they find that a 5 percent drop in incomes increases the likelihood of a civil conflict in the following year by nearly one half. This analysis highlights the role that income shocks play in generating armed conflict in Africa. Unfortunately, this econometric strategy does not allow the authors to pin down a unique causal mechanism: rainfall shocks may provoke conflict because they lower the opportunity cost of recruitment and fighting among rural populations (those most affected by weather shocks), or because crop failure also reduces government revenues and state capacity, or both.[24]

Building on this approach, Bruckner and Ciccone (2007) use a different instrumental variable, terms of trade shocks driven by commodity price movements. While not as clearly exogenous as rainfall, since some large producers have power in global commodity markets, this is also a step forward in terms of estimating causal impacts. Bruckner and Ciccone find a large effect of adverse income shocks on conflict risk, but only among African countries that are relatively undemocratic. This finding differs from Miguel et al. (2004), who do not find any statistically significant interactions between income shocks and political institutions (although the different democracy measures employed in the two studies could partially explain the divergence, as well as the different instrumental variables).

In a similar vein, Bazzi and Blattman (2008) examine the effect of trade shocks on civil war, using exogenous changes in international commodity prices and disaggregated data on country trade shares. These shocks show little consistent relation to conflict, however, whether the

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[23] This empirical approach is most appropriate for Africa, where the reliance on rain-fed agriculture is uniquely high.

[24] Future work should also examine the possibility that droughts lead to clashes between settled and nomadic groups, an issue particularly salient in the Sahel and the Horn of Africa.

shocks are experienced mainly by farmers (i.e. in agricultural commodities), the government (i.e. in minerals or energy), or in the aggregate. The authors also show that theirs (and previous) results relating commodity price changes to national income and conflict are sensitive to the definition of conflict and the specification employed, raising questions about the use of commodity prices and terms of trade as convincing instrumental variables.[25]

More important than generating any single result, these papers illustrate the advantage of quasi-experimental econometric approaches for distinguishing correlation from causation. Indeed, future cross-country empirical work should improve causal identification by a focusing on a single, or small number of, exogenous conflict determinants and plausible instruments rather than running horse races between multiple plausibly endogenous variables.

More detailed and theoretically-motivated measurement. The cross-country literature is plagued by poorly measured proxy variables that limit inference and can exacerbate endogeneity concerns. Recent developments in the literature on natural resources and conflict illustrate the high value of better measurement.[26] Leonard and Straus (2003) emphasize the importance of enclave production, where production and revenue are geographically concentrated as well as disconnected from the mass of society. More accurate data have been compiled on oil production and reserves (Humphreys, 2005), while others have done the same for primary and secondary diamond deposits (Gilmore, Gleditsch, Lujala, & RØd, 2005), and mineral rents (Hamilton & Clemens, 1999). Ross (2006) finds that these new and improved measures of underlying hydrocarbon and diamond deposits are strongly associated with more civil conflict, while older natural resource measures show less robust correlations. These findings bolster the contest model predic-

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[25] This is in contrast to (e.g. Brückner & Ciccone, 2007; Deaton & Miller, 1995).

[26] For a review of the literature see Ross (2004b, 2006) and Humphreys (2005).

tion that insurgencies flourish in resource rich regions because of the existence of more rents to fight over and the availability of easy finance, a finding echoed by some case studies (Le Billon, 2001, 2005; Ross, 2004a).

There remains a need, however, for better measures of political grievances, poverty, and institutional quality. Consider political grievances. Much has been made of the weak cross-country association between armed conflict and grievance proxies, including economic inequality and ethnic fractionalization (e.g. Havard Hegre & Sambanis, 2006; Laitin, 2007). This weak association is surprising given the robust negative relationship between economic performance and social divisions, as well as popular perceptions of their centrality in driving civil conflict (Alesina & La Ferrara, 2005; Alesina & Perotti, 1996; Easterly & Levine, 1997). However, if risk factors like inequality and ethnic fragmentation are measured with considerable error, or if their relationship to conflict is conditional on particular institutional contexts, then we might expect its coefficient in a simple cross-country regression to be small and statistically insignificant. A similar argument could be made for the existing and quite crude measures of state capacity.

Another concern is that the existing proxies are theoretically incorrect. National income per capita, for instance, may not capture the relevant aspects of poverty, such as the proportion of rural youth living on close to subsistence income. Indices of ethnic fractionalization (i.e. diversity) have also been questioned as a meaningful proxy for ethnic tensions (e.g. Posner, 2004a, 2004b). Here, however, we have seen some progress. Esteban and Ray (1999) propose that a bimodal distribution of preferences or resources—"polarization"—is linked to greater conflict risk. Montalvo and Reynal-Querol (2005) create a new empirical measure of polarization and find some support for Esteban and Ray's theory: while fractionalization is not robustly correlated with conflict, polarization robustly predicts civil war incidence. Their result, however, has been

critiqued as somewhat fragile and driven by a small number of cases (Schneider & Wiese-homeier, 2007). More recently, measures of ethnic *dominance*—effectively indicators of minority ethnic rule—have been developed and explored; Cederman and Girardin (2007) find that minority ethnic rule is associated with increased risk of war, although once again this result may not be robust (Fearon, Kasara, & Laitin, 2007).[27]

The systematic exploration of alternative ethnicity measures—well-motivated by theory and case evidence—has been productive and informative. While we ought never to mistake an absence of evidence for evidence of absence, after the recent measurement debates we can perhaps be more confident about the relationship between ethnic divisions and armed conflict. Other conflict risk factors could benefit from the same degree of empirical and theoretical scrutiny.

Integration with case studies. While the case literature is diverse and impossible to summarize in full, historical studies and multi-country case studies are beginning to illuminate the causal dynamics driving civil conflict (e.g. Arnson & Zartman, 2005; Collier & Sambanis, 2005a, 2005b; Laitin, 2005). In this literature, a number of influential patterns and mechanisms driving conflict stand out: the conflict-provoking effects of commodity price shocks on fragile economies; the immense and influential role of external financing to sustain insurgencies (including providing cross-border territory for camps, markets for extracted resources, and military and financial aid); the pervasiveness of earlier state repression; persistent ethnic or elite class

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[27] Another area of measurement concern is income inequality. Some case studies suggest that 'horizontal' inequality—inequality that coincides with ethnic or other politically salient cleavages—is a particularly important driver of civil conflict (Nicholas Sambanis, 2005; Stewart, 2001). Yet more work is necessary to code these inequalities, as the existing data remains fragmented and incomplete, and their sensitivity unexplored (Besancon, 2005; Gurr & Moore, 1997; Østby, 2005). Even with increasingly better measures, it remains difficult to say whether it is the extent of inequality or its context (factors such as state strength and local ideological conditions) that matter most (Cramer, 2003).

dominance; and the emergence of insurgencies in peripheral regions outside of central government military control.

An instructive case study is Nigeria (Zinn, 2005). Since the 1980s, Nigeria, with its string of repressive military governments, high oil production, major ethnic and religious cleavages, and economic collapse in the 1980s and 1990s should have been especially prone to civil war, at least according to the predictions of some models. Yet its only civil war episode was a secessionist conflict in the 1960s, when these same risk factors were less salient. Nigeria thus may offer us both a case of a 'false positive' and a 'false negative'. The possible explanations are revealing. Zinn argues that standard conflict risk models may fail to predict the secessionist war for a variety of reasons, including their emphasis on ethnic fractionalization rather than ethnic dominance, and a focus on the existence of natural resource abundance rather than the geographic concentration of resources in politically alienated regions. Turning to the absence of civil war during and after the 1980s, there has in fact been endemic political violence resulting in thousands of deaths, implying we may need a different measure of conflict, perhaps with a lower casualty threshold. Moreover, the government appears to have skillfully employed selective repression and political accommodation in order to avert open warfare. The federal structure of the nation may have also helped to diffuse ethnic rivalry at the center.[28] Whether this analysis is right or wrong, what is without doubt is that a single case like Nigeria, if studied closely, can illustrate causal mechanisms, generate new hypotheses for testing, stimulate ideas for innovative data collection, and highlight the importance of under-explored theoretical mechanisms.

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[28] This argument echoes that of Horowitz (1985) who, in his seminal contribution to the study of ethnic conflict, argues for federalism as an institutional reform that changes the locus of conflict from the center to an increasingly large set of small conflicts in different federal states.

Unpacking and measuring institutions. Both the case and cross-country empirical evidence highlight the susceptibility of states with weak institutions to civil war.[29] In particular, partly democratic societies (sometimes called *anocracies* in political science) have emerged as prime suspects as incubators of civil conflict. By this argument, violent collective action occurs because dissidents are free enough to organize but non-violent political activism is typically ineffective at achieving their political objectives (Fearon & Laitin, 2003; Håvard Hegre, Ellingsen, Gates, & Gleditsch, 2001).

Yet recent work suggests such findings must be taken with extreme caution. For instance, democracy and anocracy measures, commonly based upon the Polity IV dataset (Marshall & Jaggers, 2006), explicitly use civil war and political violence in the coding of the data, ,thus mechanically correlating democracy and conflict by definition (Vreeland, forthcoming).

These findings highlight the need for better measures along different dimensions of state institutions, and less reliance on existing data; while they have the virtue of being easily downloaded, they were seldom developed for the purpose intended, sometimes to ill effect.

Reviewing the case literature, Sambanis (2005) suggests several possibilities awaiting empirical exploration: considering new versus established democracies separately; the mass inclusiveness of political institutions; the geographic concentration of power; and the degree of state control over a country's geographic periphery. Leonard and Strauss (2003) also emphasize the importance of institutions of personal rule. Several of these institutions have yet to be carefully defined and measured; where they exist, moreover, they have not been tested against the alterna-

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[29] Fearon and Laitin (2003) associate conflict with "politically weak central governments" with "weak local policing or inept and corrupt counterinsurgency practices" and also as regimes mixing "democratic with autocratic features."

tives.[30]

Beyond borders. Another promising direction includes efforts to look for the causes of civil conflict beyond the nation state. In particular, several papers investigate the influence of neighboring countries. Hegre and Sambanis (2006) find that war in a geographically contiguous country is a robust predictor of armed civil conflict, what is often called transnational conflict contagion. Gleditsch (2007) finds that the presence of trans-boundary ethnic groups increases conflict risk, while having stronger democracies in the region and more interregional trade are both associated with less civil war. Salehyan and Gleditsch (2006) provide evidence for another potential source of conflict contagion: refugees. Refugee flows may ease arms smuggling, expand rebel social networks, and provide a new pool of rebel recruits with few local alternatives. [31]

A typology of conflict. Finally, political scientists have begun to ask whether the heterogeneity in types of civil war can account for the inconsistent performance of cross-country empirical models. Are the 1967 Biafran separatist conflict in Nigeria, Nepal's Maoist insurgency, and the long-running insurgency in Colombia all examples of the same phenomenon? In response, several papers have begun to explore new civil war "typologies". Some have segregated wars by scale, distinguishing between 'conflicts' of 25 to 1000 battle deaths per year, versus 'wars' of more than 1000 battle deaths (N. P. Gleditsch et al., 2002). Others, like Sambanis (2001), explore

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[30] Some of these measures may be endogenous to conflict, however, and thus may be of greater use in predicting conflict risk than in establishing causal impacts.

[31] A completely different approach to borders is taken by sociologists Wimmer and Min (2006), who use fixed geographic territories over two centuries (rather than the more recent nation state) as the unit of analysis. They argue that the likelihood of civil and interstate wars has been highest during the two institutional transformations that shaped the modern world: incorporation into European empires (often in the 19th century) and nation-state formation, which for most of Africa and Asia took place in the mid 20th century. Many wars, they argue, are fought over the state's institutional structure, and so are most likely to occur when these institutional principles are contested.

whether 'identity' (i.e. ethnic and religious) wars have different causes than 'nonidentity' wars.

Meanwhile, Fearon (2004) proceeds inductively, sorting cases by duration and looking for salient patterns. Short duration wars disproportionately include those initiated by coups and popular revolutions, those arising from the breakup of the former Soviet Union, as well as anticolonial wars, while peripheral region insurgencies and 'sons-of-the-soil' movements (fought by the local majority against in-migrants) tend to last much longer.

Kalyvas (2005, 2007) and Balcells and Kalyvas (2007) suggest an alternative typology based on war origins and conduct, identifying four main classes: *conventional* wars (featuring regular armies and defined front lines) that arise out of failed military coups and secession attempts; *irregular* (or non-conventional) wars with regular armies fighting peripheral or rural insurgencies; *symmetric irregular* wars, fought between weak national armies and insurgents; and finally the least common, *urban* wars.

Of course, such sub-classifications may only increase the volatility and sensitivity of empirical results, increasing uncertainty rather than confidence (especially because it will subdivide an already uncommon event into smaller sub-categories). A further concern is that a generally-accepted approach (and theoretical justification) for sub-classification will prove elusive.

Further challenges and paths ahead for cross-country empirical work

The abundance of new directions discussed makes clear that cross-country conflict empirics have some mileage remaining. But the path forward looks different than the one already traveled. Existing empirical models are seldom rooted in formal economic theories of conflict and seldom distinguish between competing accounts and mechanisms. Regression functional forms are too often ad hoc, and the selection of proxies is driven by the variables easily at hand (or online),

their inclusion justified by informal arguments about the causes of war. As we noted in the survey of conflict theory, there is good reason to believe that the relationships between conflict and income shocks, ethnic diversity, political grievance and other factors should be conditional ones, evident primarily when interacted with other variables, and so the theorizing and testing of these potentially complex interactions is a logical next step for future cross-country conflict research.

As work advances in this literature, there are a handful of best practices to maintain: first, relentless robustness and specification checking for both dependent and independent variables; second, a focus on causal identification via the use of a single (or small number of) exogenous or instrumental variables; third, the generation of new data on time-varying conflict risk factors and triggers; and fourth, investing in the measurement of key conflict determinants, including better measures of political grievance, poverty among particular population subgroups, and the various dimensions of state institutions and capacity.

Although deriving policy implications is not the main goal of this survey, there are some immediate implications of these findings that are worth emphasizing. The robust empirical relationship between poverty and violence found in the cross-country literature suggests that implementing insurance schemes to protect poor societies from negative income shocks could be fruitful in reducing the risk of violent civil conflict. A number of authors have recently proposed reforms to the design of foreign aid and to national agricultural policies to help blunt aggregate income shocks and thus help avoid future rounds of bloodshed (Collier & Hoeffler, 2002). One possibility is expanded regional crop insurance against drought for farmers. Another is foreign aid that is contingent on objective conflict risk indicators (e.g., weather shocks, export commodity price shocks), what Miguel (2007) calls "rapid conflict prevention support". This form of donor support would temporarily bolster local economic conditions at key junctures, when the risk

of social instability is high. Targeting this aid towards the social groups most likely to participate in armed violence – for example, by funding temporary job creation for unemployed young men, or crop insurance for farmers – might be most effective in preventing armed conflicts from occurring in conflict prone countries, most importantly in Sub-Saharan Africa. Several African countries, most notably Botswana, have already successfully implemented similar national drought insurance programs including public works employment, and these could serve as models (Valentine, 1993).

3.2 Micro-level empirical evidence on the causes of civil war

The analysis of regional and household data is an increasingly prolific (and perhaps the most promising) new direction of empirical research. Three questions have been of greatest interest so far: (i) the roots of individual participation in armed groups; (ii) the role of internal geography in influencing where and when civil conflicts are fought; and (iii) the actual organization and conduct of conflict.

There are three main limitations on this new applied literature. First, the necessary datasets are expensive, hard-won, and often require a mix of luck and ingenuity. Hence they are too few in number. Second, sufficient attention has not yet been paid to variable measurement, research design, and econometric identification. Third, it remains to be seen to what extent findings generalize such that micro-level insights from any one war are relevant to other conflicts. These limits must be overcome for this new quantitative literature to fulfill its promise.

The decision to rebel

Individuals are the natural unit of analysis for understanding how competing armed groups mobilize civilians to fight and contribute resources to their cause. The standard assumption of

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group membership and cohesion needs better justification. In response, the solutions to the problem of collective action are the subject of a growing empirical literature.

The largest body of evidence comes from case studies of 20th century revolutions.[32] Several offer evidence consistent with economic models of self-interested economic actors seeking to maximize material payoffs. For example, Lichbach (1994, 1995) illustrates how the most successful social movements are often the ones that offer selective material incentives; Popkin (1979, 1988) finds that political entrepreneurs developed institutions to directly reward peasant rebellion in Vietnam; and Weinstein (2007) illustrates how in Mozambique, Sierra Leone, and Peru rebel fighters were remunerated via looting of civilian property and drug sales.

Material incentives may also be non-pecuniary. Where violence against civilians is commonplace, joining an armed group has been in many cases a path to safety and self-preservation (see Goodwin, 2006; Kalyvas & Kocher, 2006; Lichbach, 1995; Mason & Krane, 1989 for examples).

Yet material incentives are not always present in the individual decision to fight, leading some scholars to instead argue that moral, ideological, or ethnic grievances mainly facilitate collective action. Scott (1976) and Wood (2003) argue convincingly that moral outrage led people to rebel against deprivation and modernization in Southeast Asia, and over government abuses in El Salvador. In neither case were selective material incentives apparent.[33] Another literature documents how ethnic and social identities have been used to identify, reward, and sanction free-riders, thereby providing selective *social* incentives to participate (Moore, 1993; Ostrom, 1990; Peter-

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[32] Detailed reviews of this literature include Wood (2003) and Humphreys and Weinstein (forthcoming).

[33] Reviewing the theory and evidence on participation in terrorism and hate crime, Krueger and Maleckova (2003) suspect the primary motive of terrorists is passionate support for their movement, and that poverty and education play a secondary or indirect role. Rather, terror and hate crimes are to be viewed as a response to political conditions and feelings of indignity or frustration that have little to do with economics. As noted above, however, terrorism largely lies outside the scope of the current article.

sen, 2001; Scott, 1976; Weinstein, 2007).

A small number of recent papers employ *within*-country regional data to explore the factors that predict violence and rebellion within countries. In Indonesia, Barron et al. (2004) find positive correlations between village-level communal violence and local unemployment, economic inequality and natural disasters. Using data gathered from newspaper reports, Chen (2005) finds that areas of high baseline religious intensity experienced more social violence in the aftermath of the Indonesian financial crisis. In Nepal, Murshed and Gates (2005) find a strong correlation between district-level civil war deaths and district living standards (in particular, the living standards gap between the district and the capital). Using the same outcome measure in 75 Nepali districts, Do and Iyer (2007) find that conflict intensity is strongly related to the presence of mountainous and forested terrain, as well as higher local poverty and lower literacy rates, and is weakly related to caste diversity. Macours (2008) uses different data to argue for another dimension to Nepalese recruitment: Maoist insurgents appear to have targeted the districts with the fastest recent growth in income inequality for recruitment, via mass abductions.[34]

These studies are informative and pioneering, but many suffer from challenges of data quality and endogeneity (limitations the authors are typically the first to note). One worries, for instance, about the potential selection bias in data collected from Western, English-language news reports. Moreover, individual motivations and decisions are difficult to infer from district-level aggregate data; there is too often a tendency to make deep behavioral claims from simple cross-sectional correlations. Finally, there remains the possibility of reverse causality; for example, in a single

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[34] One of the drawbacks to reviewing a burgeoning literature is that it is difficult for the outsider (and reviewer) to readily reconcile contrasting results from different dataset and papers on the same country. The variety of recruitment and violence patterns found in Nepal alone is testament to this fact, and we look forward to more cross-dataset comparisons and weighing of alternative hypotheses for Nepal and other conflicts.

cross-section, conflict could contribute to poverty directly, as well as being driven by poverty itself. Even panel data is not immune to these concerns, due to economic changes driven by anticipated future conflict and other local omitted variables. Nevertheless, the sub-national data approach represents a useful step forward, building on the cross-country standard.

A recent study by Dube and Vargasz (2007) overcomes many of these concerns, employing exogenous price shocks and detailed data on civil violence – guerilla and paramilitary attacks, clashes with government military, and civilian casualties across over one thousand Colombian municipalities. Consistent with their theoretical model (discussed previously), they find that an increase in the international price of Colombia's leading labor-intensive export commodity, coffee, significantly reduces violence in coffee-producing regions, while an increase in the international price of an important capital-intensive export good, petroleum, increases violence in regions with oil reserves and pipelines. In an important validation of their theoretical model, they then use rural household surveys to show that the positive coffee shock affects labor market outcomes in the hypothesized way, boosting rural incomes and thus presumably raising the opportunity cost of participating in rebel groups.

To the extent the patterns observed in Indonesia, Nepal and Colombia are causal (the Colombia findings are arguably the most persuasive on this count), the most likely interpretation is that higher individual opportunity costs lower the probability of participation in armed groups, persuasive micro-evidence for a poverty-conflict link.

What none of these studies tells us, however, is by what means the collective action problem was overcome by armed groups. Poverty may lower the opportunity cost of participation, but the incentives to free ride remain unchanged. A handful of individual- and household-level studies are beginning to bring us closer to an answer to this central question.

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Working in post-genocide Rwanda, Verwimp (2003, 2005) built a panel dataset based on a pre-genocide agricultural survey. He finds that both wage workers and land renters were disproportionately represented among genocide perpetrators, and that they appear to have been motivated to kill by interest in the property of landlords (who were disproportionately victims).[35] In Sierra Leone, Humphreys and Weinstein (forthcoming) collect post-war data on combatants and non-combatants from the same villages. They find that retrospective measures of poverty (e.g. mud housing), lack of education, and rebel promises of material rewards are robustly correlated with both voluntary and forced recruitment by armed groups on both sides. Proxies for political exclusion, such as being a supporter of the national opposition political party, did not predict participation.

Taken together, these studies suggest that material incentives are influential in driving killing even in the most brutal civil wars and in genocide—supposedly the quintessential act of irrational hatred. Proxies for political grievances perform far more poorly at predicting individual behavior than economic factors in these cases. Even so, existing data on political grievances are exceedingly coarse, and may not adequately account for context specificity. Once again, more detailed data on political attitudes and grievances are clearly an important future avenue, a move that will require greater investment in case research and field survey data collection.

The above examples also call attention to the importance of measuring the incentives offered by armed organizations, both offers taken and those refused. Humphreys and Weinstein (forthcoming) and Beber and Blattman (2008) conclude that a robust assessment of competing explanations for rebel recruitment would require data on the individuals characteristics of rebel participants and non-participants, as well as the recruitment "offers" received by both groups.

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[35] Andre and Platteau (1998) find related results in a smaller survey.

These data will obviously be extremely challenging to collect, especially given the higher and selective mortality experienced during civil wars, and may require more active coordination between researchers and humanitarian organizations and aid donors.

Internal geography

Like recruitment, geographic patterns of conflict within states are best explored using sub-national data. To this end, researchers in organizations like the International Peace Research Institute of Oslo (PRIO) have begun to construct and analyze sub-national conflict datasets. Early results are largely consistent with the existing cross-country and case evidence on the role of geography. Buhaug and Rød (2006), for instance, disaggregate conflict and geographic country data into 100x100 km grids within Africa, and find that separatist conflicts are more likely to occur in sparsely populated regions near state borders, at greater distances from the capital (where political control by the central government is likely costlier), and in the vicinity of petroleum fields, where presumably the rents of political power for secessionists are highest.

The existence of easily lootable resources in the context of a bitterly poor society also drove violence in Sierra Leone's civil war: there are significantly more armed clashes within chiefdoms containing greater lootable diamond wealth (Bellows & Miguel, 2008). In contrast, insurgencies aiming to topple a central government are more likely to wage battles in populous regions near the capital, consistent with their political objectives.

The organization and conduct of warfare

Another development – and one that could benefit from better guidance from economic theory – is empirical research on fighting factions themselves, with an eye towards understanding the operation of these organizations and the interaction among factions and with civilian popula-

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tions. This work will hopefully someday allow progress to be made in understanding the empirical relevance of information asymmetries and commitment problems in strategy and tactics.[36]

Empirical evidence on armed group organization and action remains scattered and piecemeal. Important areas of empirical exploration include further explorations of the choice between alternative recruitment and incentive strategies, the strategic use of violence, information dissemination and repression, the dynamics of war escalation (from scattered attacks to full scale conflict), and the formation and growth of rebel organizations. Empirical evidence of commitment problems and imperfect information at work at the level of armed (and perhaps non-armed) groups is also undeveloped.

Some recent work finds that armed groups appear to respond strategically to new information. Iyengar and Monten (2008) develop data on insurgent attacks and media coverage in Iraq and find an 'emboldenment' effect of new information about U.S. withdrawal intentions. They use this evidence to illustrate that insurgent organizations are sophisticated strategic actors, but while doing so also illustrate the existence of imperfect information between the warring parties (if there were perfect information, policy debates in Washington DC would not affect Iraqi insurgents' fighting strategies), one of the leading theoretical source of rational war.

Finally, there has been some exploration of alternative recruitment and incentive schemes, including coercion. These unconventional incentives have typically been the subject of sociology (Etzioni, 1975; Olson, 1971) and some principal-agent theory (Chwe, 1990). Humphreys and

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[36] Sociological and psychological understandings of inter-personal violence contrasts sharply with the rational choice approach we emphasize in this article. Collins (2008) argues that most inter-personal and combat violence is characterized by a short and confused belligerent "haze". Actors are emotionally overwhelmed with tension and fear, and violence is perceived as the resolution of this fear. These findings are not necessarily inconsistent with rational models of war or guerrilla organization, but reconciling these views is beyond the scope of this article.

Weinstein (forthcoming) find that the empirical determinants of volunteer and forcible recruitment were very similar in Sierra Leone. This suggests that, on the one hand, rebel leaders might be employing selective rewards and punishments strategically. Alternatively, it could point to the limitations of postwar self-reported data on the rebel participation decision, namely, that many respondents could have strong incentives to lie about the nature of their recruitment and wartime behaviors (claiming they were abducted even if they in fact volunteered to fight), to escape social disapproval or even legal prosecution.

Beber and Blattman (2008) examine rebel recruitment in northern Uganda, where an absence of resources with which to pay rebel fighters meant that virtually all recruitment was forced. Adolescents proved more responsive to the selective incentives at hand—namely pain and propaganda—and so were disproportionately recruited over adults and children.

4   Economic legacies of civil conflict

People living in zones of war are maimed, killed, and see their property destroyed. They may be displaced, stopped from attending school, or prevented from earning a living. A growing empirical literature estimates the magnitude of the effects of war on income, poverty, wealth, health, and education.[37] Each of these outcomes has implications beyond the individual, however. To the extent that these costs are borne unequally between groups and households, conflict could intensify inequality as well as poverty. The destruction (and deferred accumulation) of both human and physical capital also hinder macroeconomic performance, combining with any effects of war on institutions and technology to reduce national incomes and growth.

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[37] Justino (2007) also surveys this emerging literature. Many of the scholars, datasets, and working papers are being shared via groups such as the Households in Conflict Network (http://www.hicn.org).

The aggregate effects of armed conflict, and its threat, are considerable. Rodrik (1999) argues that outbreaks of social conflict are a primary reason why country economic growth rates lack persistence and why so many countries have experienced a growth collapse since the mid-1970s. A number of cross-country growth studies link measures of political instability—including changes in government or political unrest—to large negative effects on national savings, investment, income and growth.[38] Cerra and Saxena (2008) find that output declines six percent in the immediate aftermath of a civil war, with three percentage points of cumulative loss even after a decade. Quantitative case evidence supports this cross-country relationship; Abadie & Gardeazabal (2003) find that terrorist violence in the Basque region of Spain has significantly reduced economic growth there relative to neighboring regions. The effect on poverty can be dramatic; in Rwanda, 20 percent of the population moved into poverty following the genocide (Justino & Verwimp, 2006). Civil wars may even have negative growth spillovers on neighboring countries (Murdoch & Sandler, 2004).

An economic growth theoretical framework is useful for analyzing the economic consequences of conflict. If conflict affects economic performance, it must be because it affects a factor of production (physical capital, labor, or human capital), the technology and institutions that augment these factors, or prices (e.g. costs of capital). The growth framework also clarifies the possible nature of the impacts, not only the level and growth effects in equilibrium, but also out-of-equilibrium dynamics such as the speed of convergence.

The framework we focus on below to organize our discussion is based on neoclassical models

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[38] (Alesina, Ozler, Roubini, & Swagel, 1996; Alesina & Perotti, 1996; Barro, 1991; Svensson, 1998). Gyimah-Brempong & Traynor (1999) suggest that the political instability-growth relationship may be somewhat endogenous but that the association is likely to persist even after better accounting for this bias.

of growth with human capital (e.g. Lucas, 1988; Mankiw, Romer, & Weil, 1992). Different growth frameworks, however, can generate radically different predictions regarding the likely impact of violence—and, in particular, the destruction capital—on economic performance. A one-time destruction of capital has no effect on equilibrium income or growth in a neoclassical model, but persistent effects are possible in poverty trap, vintage capital, and endogenous growth models (e.g. Azariadis & Drazen, 1990; Barro & Sala-i-Martin, 2003; Gilchrist & Williams, 2004).

Another conceptual framework emphasizes the role of civil war duration. Economic growth rates tend to fall during civil wars in less developed countries (Hess, 2003). Thus even if economic recovery after war is often quite rapid, long duration civil conflicts could still have adverse long-run effects on income levels, especially so if a history of civil war makes future fighting even more likely.

Given the proliferation of plausible theoretical perspectives and uncertainty over the relative magnitude of impacts, empirical evidence is needed to understand the most pressing economic consequences of civil war, in order to direct post-war policy and aid priorities appropriately.

4.1 Physical capital and investment

Evidence from interstate wars suggests that physical capital behaves as predicted by the neoclassical model—rapid recovery to equilibrium levels. One set of studies examines the impact of U.S. bombing on later outcomes at the city or regional level. Although they lack direct information on local physical capital levels, in Japan (Davis & Weinstein, 2002) and Germany (Brakman, Garretsen, & Schramm, 2004) in World War II, cities/regions that were heavily bombed quickly recover in population back to prewar trends, such that 20 to 25 years after the

war city populations are indistinguishable from cities that were left untouched by the bombing. In the Vietnam War, a conflict that combined an external army and a civil war, Miguel & Roland (2005) find similarly rapid local population recovery from U.S. bombing, and augment the analysis to show that physical infrastructure, education, and poverty levels all also converge across regions within 25 years of war's end.

These cross-region results echo the consensus from the cross-country literature on the rapid recovery of postwar economies (Organski & Kugler, 1977, 1980; Przeworski, Alvarez, Cheibub, & Limongi, 2000). Indeed, a recent study of the output response to alternative crises—including currency crises, banking crises, civil war, and sudden shifts in executive power—finds that while civil wars cause the steepest short-run fall in output (six percent on average), only in the case of civil war does output rebound quickly, recovering half of the fall within a few years (Cerra & Saxena, 2008). Similarly, looking at civil-war affected countries who do not return to conflict, Chen, Loayza, & Reynal-Querol (2008) show that measured economic, social, and political development experience steady improvement in the aftermath of the war. While such event studies conceal a great deal of heterogeneity in experiences, taken together, none of these results appear *prima facie* consistent with poverty trap models of economic growth such as those recently advanced in popular writing by Sachs (2005).

Nevertheless, there are reasons to be cautious about generalizing about postwar economic recovery. Countries with successful postwar recovery experiences are also more likely to collect systematic economic data, introducing possible selection bias; war-torn countries where the economy and institutions have collapsed (e.g. Congo and Somalia) lack good data, preventing an accurate estimation of war impacts in those societies. More importantly, civil wars are often localized and fought with small arms and munitions, and so they do not necessarily see the large-

scale military destruction of capital caused by bombing.

Yet even in these conflicts capital can be depleted in devastating ways. First, household assets are stolen by belligerents and opportunists. Mozambicans, for instance, are thought to have lost 80% of their cattle stock during their civil war (Bruck, 1996), while many in northern Uganda effectively lost all of their cattle, homes and assets (Annan, Blattman, & Horton, 2006; Gersony, 1997). Cattle and other farm assets often represent most of a rural household's capital stock, so their loss can be deeply impoverishing. As of yet, there is still limited systematic panel data, however, on the implications of such asset loss on long-run welfare.

Second, countries at war are likely to see massive flight of mobile forms of capital; foreign assets offer higher relative returns at lower risk when there is a civil war at home, with a risk of capital destruction or appropriation and high levels of uncertainty over future returns (Collier, 1999; Collier, Hoeffler, & Pattillo, 2002). The same factors could lead to such low levels of new investment that the existing capital stock quickly deteriorates.

Rising military spending can also crowd out government infrastructure projects and other public goods. A World Bank report estimates that average military spending in poor countries rises from 2.8 percent of national income in peace to 5 percent at war (Collier et al., 2003). Cross country evidence suggests that such military spending is growth retarding due to the allocation away from productive investment (Knight, Loayza, & Villanueva, 1996).

The neoclassical model predicts that, once the fighting stops, the capital stock should eventually return to its steady state levels, implying relatively high returns and rates of investment that decline as the equilibrium is approached. The prediction that prewar levels should eventually be re-attained supposes that underlying institutions and technology are largely unaffected by the fighting, and that military spending, the returns to capital investment and the cost of capital all

return to pre-war levels. Yet Collier (1999) argues that adverse effects on the cost of capital are sometimes quite persistent empirically.

Any political or economic uncertainty following war is likely to decrease expected returns, increase relative risk, and possibly shorten investment horizons, thus reducing investment and raising the cost of capital. While the researchers mentioned above have identified a robust relationship between ongoing political instability and low economic growth and investment, there is still limited empirical evidence on the determinants of lingering political instability after war.

A potentially important factor in regaining postwar political stability and economic growth is the role of foreign aid donors. There is anecdotal evidence for countries like Sierra Leone and Liberia that the role of the international community was decisive in shifting expectations about future conflict risk (Collier, 2007). The most detailed discussion of foreign aid and conflict prevention, to our knowledge, is Collier and Hoeffler (2002). These researchers claim that an increase in foreign aid is likely to reduce civil conflict risk, and they empirically demonstrate some modest reductions in conflict for aid recipients, working through the channel of faster economic growth. De Ree and Nillesen (2006) reach a similar conclusion by examining foreign aid disbursements and civil conflict risk in Sub-Saharan Africa, using a more sophisticated instrumental variable econometric strategy that exploits exogenous changes in donors' overall foreign aid budgets, and find that a 10 percent increase in foreign aid to an African country reduces civil conflict risk by 6 percent. Taken together, these two studies suggest that postwar foreign aid could be critical in solidifying the transition to peace. Although further empirical evidence focusing specifically on postwar cases is called for, these findings may have important implications

for foreign aid policy, especially for Sub-Saharan Africa.[39]

4.2 Life, labor and human capital

Wars most obviously kill and maim people, both directly and indirectly by famine and disease.[40] Its victims are overwhelmingly made up of civilians, and indirect deaths are seen disproportionately among the poor, women and children (H. A. H. A. Ghobarah et al., 2004).

The short-run impacts of war are clearly disastrous, but there is mixed evidence on whether these effects on the quality of life persist. In the study of Vietnam bombing mentioned above, local living standards and human capital levels converged rapidly across regions after the war, leaving few visible economic legacies 25 years later (Miguel & Roland, 2005), echoing the cross-country literature showing rapid post-war economic recovery.

A new and rapidly growing microeconomic literature finds more negative persistent war impacts on individual human capital, especially in African cases. Using panel data on child nutrition, (Alderman, Hoddinott, & Kinsey, 2004) find that young children who suffered from war-related malnutrition in Zimbabwe are significantly shorter as adults, and this may affect their lifetime labor productivity. In a related paper, Akresh and Verwimp (forthcoming) exploit variation in the timing of armed clashes in the Burundi civil war to estimate impacts on child nutrition, and find that children who lived in a war-affected region have sharply lower height-for-age

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[39] An emerging literature also examines the role that postwar demilitarization programs (usually funded by foreign aid donors) could play in securing the peace, although there remains little systematic evidence on the effectiveness of these programs.

[40] Wars are thought to have directly caused 269,000 deaths and 8.44 million disability-adjusted life-years (DALYs) in 1999 alone, with twice again this number of deaths and DALYs estimated in 1999 due to the lingering effects of wars between 1991 and 1997 (H. A. Ghobarah, Huth, & Russett, 2003; 2004).

than other children, with an average drop of roughly 0.5 standard deviations. Turning to a Central Asian setting, adolescent Tajik girls whose homes were destroyed during the civil war there are less likely to obtain secondary education (Shemyakina, 2006), again with likely effects on later wages and life chances. The validity of these studies, all of which use a difference-in-differences analysis, relies on the assumption of similar underlying human development trends in the war-affected and peaceful regions of these countries, something that is challenging to convincingly establish with the limitations of most existing household datasets.[41]

Turning to combatants, a growing body of evidence suggests that the interruption of human capital accumulation is one of the most pervasive impacts of military service. Studies of U.S. and European veterans of the Vietnam and Second World Wars find large and persistent falls in earnings and mortality (Angrist, 1990, 1998; Angrist & Krueger, 1994; Hearst, Newman, & Hulley, 1986; Imbens & van der Klaauw, 1995). These patterns are echoed by new evidence from developing countries. (Blattman & Annan, 2007) use arguably exogenous variation in rebel recruitment methods to estimate the impact of forced recruitment on adolescents and young adults; these youth are more likely to have persistent injuries, accumulate less schooling and experience, are less likely to be engaged in skilled work, and earn lower wages when they become adults. Psychological trauma and community rejection, meanwhile, is concentrated in the small minority that experiences the most violence.[42] The conclusion that emerges is that military experience is a poor substitute for civilian education and labor market experience. In some recent African civil

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[41] An unexpected spillover effect of war on the human capital of *neighbors* comes from Montalvo & Reynal-Querol (2007) who, using civil wars as an instrumental variable, argue that for each 1,000 refugees there are between 2,000 and 2,700 cases of malaria in the refugee-receiving country.

[42] A somewhat different pattern is observed among former fighters in Sierra Leone. Humphreys and Weinstein (2004, 2005) find that exogenous increases in fighters' exposure to violence lead to lower post-war community acceptance, but that violence has little impact on employability.

wars, such as northern Uganda and Mozambique, up to a third of male youth are thought to have actively participated, hence aggregate economic impacts could be quantitatively important.

This emerging applied microeconomic literature only scratches the surface of the range of civil war impacts on the economy and society. More evidence is required on the educational, employment, and health impacts of conflict on armed group participants and civilians. Other potentially important topics awaiting systematic empirical analysis using panel data include the role of war-related emigration (especially of the skilled) on later economic growth, the general equilibrium effects of death and emigration on labor markets, and the possibly persistent effect on the prices of land, capital, and labor in civil war regions.[43]

4.3 Technology, institutions, and society

Their populations and capital stocks devastated by war, Germany, Japan, and Vietnam nevertheless rebounded to pre-war levels of production and growth in two decades. In this they could be said to fulfill the predictions of the neoclassical model: a rapid return to steady state income growth after a shock to the endogenous factors of capital and labor. The steady states to which these societies returned, however, were a function of other fundamental factors, namely technology, institutions, and social organization. The rapid return to pre-war levels of economic development in Germany, Japan, and Vietnam suggest that these fundamental factors were not diminished by war or, if they were, they likewise recuperated quickly.

Unfortunately, we have little systematic quantitative data with which to rigorously judge claims about the evolution of institutions. A sizable literature has sought to identify the institu-

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[43] To the extent that the sudden death of sizeable shares of the adult population could affect relative prices, as well as fertility and investment decisions, civil war could have impacts on living standards reminiscent of the HIV/AIDS epidemic in Sub-Saharan Africa (along the lines argued in Young (2005)).

tions that matter most for economic growth—property rights, rational bureaucracies, social capital and cohesion, work ethic, to name a few – but which are most affected by civil conflict and under what circumstances is virtually unknown. The answer, moreover, is undoubtedly complex. For example, in the three country cases mentioned above, the war was fought against a foreign army (although the Vietnam War combined a civil war and an external intervention). In civil war, victors and vanquished and victims are condemned to live in the same society postwar, while wars against external enemies could even rally the population together and give government officials renewed purpose and motivation. Thus, intuitively, civil wars seem more likely to exacerbate political and social divisions and weaken national political institutions..

The idea that international war could lead to institution building finds historical support. Using historical and case study evidence, influential scholars have claimed that war served a critical role in enabling the development of strong and capable government institutions in Europe (Tilly, 1975, 1992). Suggestive evidence that civil war may not be constructive for institutional development and national economic growth comes from Cerra and Saxena (2008), who find that in the aftermath of civil war, aggregate output falls by six percent in the typical country, rebounding by half within a few years. Yet if the civil war is accompanied by a deterioration in the institutions of governance—for them proxied by a sharp centralization of executive political power—the short-run output drop doubles and no economic recovery is observed within a decade. Unfortunately, the direction of causality is not clear: perhaps attempts to centralize power provoke civil wars rather than the other way round, or leaders' ability to centralize power is suggestive of a broader institutional failing. Given the prevalence of civil conflict—two thirds of African nations have experienced some form of societal warfare just since 1991 (Marshall & Gurr, 2005)—understanding how and why civil wars lead to recovery rather than persistent poverty is crucial if

economics is to be relevant for Africa, the world's poorest region.

Another important dimension of institutions include social norms regarding political participation and accountability. In fact, of the patchy data available, some of the results are quite counter-intuitive, such as a surprising link between war violence and productive citizenship postwar. A recent micro-study finds positive impacts of individual war victimization on later individual political mobilization and participation in local collective action in Sierra Leone, which the authors interpret as a result of the psychological legacies of individual violence exposure (Bellows & Miguel, 2006). This finding echoes other work. Former combatants in Uganda were more likely to vote and become local leaders as a consequence of experiencing violence during the war (Blattman, 2008). Likewise, psychologists found that that the victims of violence are in general resilient (Masten, 2001), and that exposure has even led to political activism among groups such as Jewish Holocaust survivors (Carmil & Breznitz, 1990) and Palestinian victims of bombardment (Punamäki, Qouta, & El Sarraj, 1997).

Future work should strive to clarify the conditions under which civil wars have adverse effects on future economic development, and along what dimensions on which segments of the population. This understanding will help policymakers and the international community recognize which violent conflicts are likely to have the worst future economic consequences, and thus potentially help peacemakers rally additional international support around ending them.

4.4 Remaining Challenges

Viewed through the lens of models of economic growth, the existing empirical literature on the impacts of civil war looks spotty. Macroeconomic studies indicate that the short-run output effects of armed conflict can be large, but more work is needed examining the underlying

effects on factors of production and relative prices. The early signs suggest that physical capital and population recover after war, perhaps as quickly as within two decades. That recovery, however, appears to be contingent on the preservation, or even the improvement, of political stability and institutions, as was the case in Japan, Germany, and Vietnam. Yet what those key institutions are, and what domestic policies and external interventions can help maintain their stability, are still too poorly understood. Compelling patterns, like the dramatic output drop when despotism accompanies civil war (discussed above), could be spurious, driven by omitted variables, rather than causal.

The microeconomic literature is even less systematic at present, although it holds great promise. Many factors appear to be adversely affected by civil war in at least some cases – from mortality to nutrition, education and productivity. The individual legacies of conflict on human capital appear persistent, especially in African civil wars. Those who participate in wars, or simply live through them, appear to suffer from persistent injuries, lose out on education, and see a permanent decline in their productivity and earnings. But understanding which impacts are more profound or persistent than others, which strike the poor and most vulnerable disproportionately; and how those effects can be limited by the right set of local institutions and policies is still largely unexplored in existing work.

Without answers to these questions, policymakers and foreign aid donors have recently taken a scattershot approach to postwar programs. The subject of post-conflict recovery policy is vast and is largely outside the scope of this review, but most of that literature is in the form of best practices summaries, case studies, and other 'grey literature' produced by international aid organizations, governments, and NGOs, while rigorous academic research remains limited (CITES—TO BE INCLUDED).

An obvious answer is to call for more data collection, more searching for (and exploitation of) natural experiments or actual field experiments, and more rigorous impact evaluations of post-conflict programs. Judging by the rise of research organizations like the Households in Conflict Network (HiCN), increased funding by the World Bank's Development Economics Research Group, and the exploding literature on the economic consequences of civil war, this call is already beginning to be answered. As the pace of conflict and post-conflict economics research accelerates, however, it becomes increasingly important to keep sight of its key objectives, especially understanding the conditions under which conflict increases (or decreases) political stability and institutional quality; understanding the persistence of war's physical and human capital impacts and the determinants of their recovery; and studying this link between conflict and economic inequality.

5 Discussion and future directions

Armed conflict is finally moving into the research mainstream in the fields of development economics and economic growth. This article has attempted to survey this flourishing field, describe its more robust findings, and point the way forward for future research in a way that is useful for both those new to the field as well as those who are already working actively within it.

Some of the core insights are worth re-stating here. First, there has been considerable progress in the formal modeling of the political economy of violence during the past fifteen years, with new insights about the individual decisions, institutional features, and economic conditions that promote violent civil conflict. Commitment problems – either across the two sides to a conflict, or among factions within a fighting side – are currently viewed as the leading rationalist theoretical explanation for why civil wars occur, especially for long-duration civil wars, although certain

types of information asymmetries may also play a role. Disentangling the relative contributions of the various commitment problems and information asymmetries proposed in the recent theoretical literature remains a top priority for future empirical research. Developing for new explanations—possibly challenging the current modeling assumptions of rationality, or unitary armed group actors—is also likely to be useful.

Second, a variety of theoretical models predict that low incomes, weak state institutions, and social divisions may contribute to the onset of civil wars, and these issues been the focus of most empirical treatments. The most robust empirical finding in the existing literature is that economic conditions – both in terms of income levels and recent growth rates – play a central role in causing the outbreak of civil wars and conflicts in less developed countries. This finding has found support at both the cross-country and the micro levels. A smaller literature suggests that economic factors also appear decisive in driving individual participation in armed groups. Weak state institutions almost certainly also play a central role. In contrast, the existing empirical evidence that social divisions, political grievances, and resource abundance are drivers of violence is much weaker and more contested. Yet more research, and better data, is needed to firmly settle the question of what role political grievances play in driving civil conflict.

There is also an emerging literature on the economic legacies of war. At this point the macro literature and newer micro literature have produced somewhat contradictory findings, although they can potentially be reconciled by appealing to the divergent outcomes they consider (the macro literature focuses on economic or population growth, while the micro literature mainly on human capital). Future work must clarify how the nature of the conflict (internal versus international) as well as the political, social, and institutional context affects its long-run economic impacts.

A key lesson that emerges is the important role that new data sources have played in enabling research progress to occur: the development of the excellent PRIO/Uppsala civil conflict database has propelled the cross-country conflict literature forward; disaggregated data on U.S. bombing patterns allowed Davis and Weinstein to carry out their seminal study on war impacts in Japan; and the increasing number of longitudinal household level datasets among interesting populations in less developed countries have made the new micro studies on war impacts possible. Some of this data collection has required remarkable ingenuity and courage on the part of the investigators – notably, the collection of original labor market data for Ugandan youth while the civil war was still ongoing (Blattman & Annan, 2007) and Humphreys and Weinstein's data collection among former Sierra Leone combatants in the immediate postwar period there.

However, much more work remains to be done. Data collection is of course inherently difficult in "hot" conflict zones. But even in many post-conflict countries, where data collection conditions are closer to normal, statistical agencies simply return to the status quo ante in terms of survey instruments, and fail to collect retrospective conflict experience data that would be extremely valuable for researchers. To illustrate from the authors' own experiences in Sierra Leone, Liberia, and Uganda neither the government statistical agencies nor the international donors financing reconstruction there had plans to systematically include questions on war experiences, participation and victimization in the national census or other representative household surveys conducted after the end of those conflicts. In some cases, these expanded data collection efforts were strongly resisted. Closer cooperation among data collection agencies, development institutions, and researchers will be required for the systematic and comparable data needed to make further progress possible.

War, conflict and violence arguably inflict more pain and suffering on humanity than any

other social phenomenon in existence. Now, they are emerging as central to many countries' economic and political evolution, and possibly as key impediments to their development. As we've discovered, and to recast a famous phrase from Bob Lucas, once you start thinking about civil war, it's hard to think of anything else.

6 References

Abadie, A., & Gardeazabal, J. (2003). The Economic Costs of Conflict: A Case Study of the Basque Country. *American Economic Review, 93*(1), 112-132.

Acemoglu, D., & Robinson, J. A. (2001). A Theory of Political Transitions. *The American Economic Review, 91*(4), 938-963.

Acemoglu, D., & Robinson, J. A. (2006). *Economic Origins of Democracy and Dictatorship*. Cambridge: Cambridge University Press.

Akresh, R., & Verwimp, P. (forthcoming). Health and Civil War in Burundi. *Journal of Human Resources*.

Alderman, H., Hoddinott, J., & Kinsey, B. (2004). Long Term Consequences of Early Childhood Malnutrition. *Oxford Economic Papers, 58*(3), 450-474.

Alesina, A., & La Ferrara, E. (2000). Participation in Heterogeneous Communities. *The Quarterly Journal of Economics, 115*(3), 847-904.

Alesina, A., & La Ferrara, E. (2005). Ethnic diversity and economic performance. *Journal of Economic Literature, 43*(3), 762-800.

Alesina, A., Ozler, S., Roubini, N., & Swagel, P. (1996). Political Instability and Economic Growth. *Journal of Economic Growth, 1*, 189-211.

Alesina, A., & Perotti, R. (1996). Income Distribution, Political Instability, and Investment. *European Economic Review, 40*(6), 1203–1228.

André, C., & Platteau, J.-P. (1998). Land relations under unbearable stress: Rwanda caught in the Malthusian trap. *Journal of Economic Behavior and Organization, 34*(1), 1-47.

Angrist, J. D. (1990). Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records. *The American Economic Review, 80*(3), 313-336.

Angrist, J. D. (1998). Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants. *Econometrica, 66*(2), 249-288.

Angrist, J. D., & Krueger, A. B. (1994). Why Do World War II Veterans Earn More than Non-veterans? *Journal of Labor Economics, 12*(1), 74-97.

Annan, J., Blattman, C., & Horton, R. (2006). *The State of Youth and Youth Protection in Northern Uganda: Findings from the Survey of War Affected Youth*: UNICEF.

Arnson, C. J., & Zartman, I. W. (Eds.). (2005). *Rethinking the Economics of War: The Intersection of Need, Creed, and Greed*: Johns Hopkins University Press.

Azam, J.-P. (2002). Looting and Conflict between Ethno-Regional Groups: Lessons for State Formation in Africa. *Journal of Conflict Resolution, 46*(1), 131-153.

Azam, J.-P. (2006). On thugs and heroes: Why warlords victimize their own civilians. *Economics of Governance, 7*(1), 53-73.

Azariadis, C., & Drazen, A. (1990). Threshold Externalities in Economic Development. *Quarterly Journal of Economics, 105*(2), 501-526.

Balcells, L., & Kalyvas, S. N. (2007). Warfare in Civil Wars. Unpublilshed working paper, Yale University.

Banerjee, A., & Duflo, E. (2003). Inequality and growth: What can the data say? *Journal of Economic Growth, 8*(3), 267-299.

Barro, R. J. (1991). Economic Growth in a Cross Section of Countries. *Quarterly Journal of*

Economics, 1(2), 189-211.

Barro, R. J., & Sala-i-Martin, X. (2003). *Economic Growth* (2 ed.). Cambridge: MIT Press.

Barron, P., Kaiser, K., & Pradhan, M. (2004). Local Conflict in Indonesia: Measuring Incidence and Identifying Patterns. *World Bank Policy Research Working Paper, 3384*.

Bates, R. H. (1986). Modernization, Ethnic Competition, and the Rationality of Politics in Contemporary Africa. *Governing in Black Africa, 6*(4), 457-484.

Bazzi, S., & Blattman, C. (2008). Commodities and Conflict. Unpublished working paper, Center for Global Development.

Beber, B., & Blattman, C. (2008). The Causes of Child Soldiering: Theory and Evidence from Uganda. *Unpublished working paper, Center for Global Development*.

Beck, N., & Katz, J. N. (2004). Time-Series-Cross-Section Issues: Dynamics, 2004. New York University, unpublished working paper.

Beck, N., Katz , J. N., & Tucker, R. (1998). Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable. *American Journal of Political Science, 42*(4), 1260-1288.

Bellows, J., & Miguel, E. (2006). War and Institutions: New Evidence from Sierra Leone. *American Economic Association, Papers and Proceedings, 96*(2), 394-399.

Bellows, J., & Miguel, E. (2008). War and Local Collective Action in Sierra Leone. Unpublished Unpublished mimeo. UC Berkeley.

Benabou, R. (2000). Unequal societies: Income distribution and the social contract. *American Economic Review, 90*(1), 96-129.

Berman, E., & Laitin, D. D. (2008). Religion, Terrorism and Public Goods: Testing the Club Model. *NBER Working Paper, 13725*.

Besancon, M. L. (2005). Relative Resources: Inequality in Ethnic Wars, Revolutions, and Genocides. *Journal of Peace Research, 42*(4), 393-415.

Besley, T. J., & Persson, T. (2008). Wars and State Capacity. London School of Economics, unpublished working paper.

Blattman, C. (2008). From Violence to Voting: War and Political Participation in Uganda. *Center for Global Development Working Paper, 138*.

Blattman, C., & Annan, J. (2007). The Consequences of Child Soldiering. *HiCN Working Paper, 22*.

Bloch, F., Sánchez-Pagés, S., & Soubeyran, R. (2006). When does universal peace prevail? Secession and group formation in conflict. *Economics of Governance, 7*(1), 3-29.

Brakman, S., Garretsen, H., & Schramm, M. (2004). The Strategic Bombing of Cities in Germany in World War II and it Impact on City Growth. *Journal of Economic Geography, 4*(1), 1-18.

Bruck, T. (1996). The Economic Effects of War. Unpublished M.Phil. thesis, Oxford University.

Brückner, M., & Ciccone, A. (2007). Growth, Democracy, and Civil War. *Economics Working Papers, Department of Economics and Business, Universitat Pompeu Fabra, 1053*.

Bueno de Mesquita, E. (2005). The Quality of Terror. *American Journal of Political Science, 49*(3), 515-530.

Bueno de Mesquita, E. (2007). Terrorist Factions. Washington University, unpublished working paper.

Buhaug, H., & Rød, J. K. (2006). Local Determinants of African Civil Wars, 1970-2001. *Political Geography, 25*(3), 315-335.

Carmil, D., & Breznitz, S. (1990). Personal Trauma and World View—Are extremely stressful experiences related to political attitudes, religious beliefs, and future orientation? *Journal of Traumatic Stress, 4*(3), 393-405.

Caselli, F., & Coleman, W. J. (2006). *On the Theory of Ethnic Conflict*: National Bureau of Economic Research Cambridge, Mass., USA.

Cederman, L.-E., & Girardin, L. (2007). Beyond Fractionalization: Mapping Ethnicity onto Nationalist Insurgencies. *American Political Science Review, 101*(1).

Cerra, V., & Saxena, S. C. (2008). Growth Dynamics: The Myth of Economic Recovery. *American Economic Review, 98*(1), 439-457.

Chassang, S., & Padro-i-Miquel, G. (2008). Conflict and Deterrence under Strategic Risk. *NBER Working Paper No. 13964*.

Chen, D. L. (2005). Islamic Resurgence and Social Violence During the Indonesian Financial Crisis. Unpublished working paper, University of Chicago.

Chen, S., Loayza, N. V., & Reynal-Querol, M. (2008). The Aftermath of Civil War. *The World Bank Economic Review, 22*(1), 63.

Chwe, M. S.-Y. (1990). Why Were Workers Whipped? Pain in a Principal-Agent Model. *The Economic Journal, 100*(403), 1109-1121.

Collier, P. (1999). On the economic consequences of civil war. *Oxford Economic Papers, 51*, 168-183.

Collier, P. (2007). *The Bottom Billion*. Oxford: Oxford University Press.

Collier, P., Elliot, V. L., Hegre, H., Hoeffler, A., Reynal-Querol, M., & Sambanis, N. (2003). *Breaking the Conflict Trap: Civil War and Development Policy*. Washington, DC: World Bank and Oxford University Press.

Collier, P., & Hoeffler, A. (1998). On economic causes of civil war. *Oxford Economic Papers, 50*(4), 563-573.

Collier, P., & Hoeffler, A. (2002). Aid, Policy and Peace: Reducing the Risks of Civil Conflict. *Defense and Peace Economics, 13*, 435-450.

Collier, P., & Hoeffler, A. (2004). Greed and Grievance in Civil War. *Oxford Economic Papers, 56*(4), 563-595.

Collier, P., Hoeffler, A., & Pattillo, C. (2002). Africa's exodus: Capital flight and the brain drain as portfolio decisions. The World Bank.

Collier, P., & Sambanis, N. (Eds.). (2005a). *Understanding Civil War, Volume 1: Africa* (Vol. 1). Washington, DC: World Bank.

Collier, P., & Sambanis, N. (Eds.). (2005b). *Understanding Civil War, Volume 2: Europe, Central Asia, and Other Regions* (Vol. 2). Washington, DC: World Bank.

Collins, R. (2008). *Violence: A Micro-sociological Theory*. Princeton: Princeton University Press.

Cramer, C. (2002). Homo Economicus Goes to War: Methodological Individualism, Rational Choice and the Political Economy of War. *World Development, 30*(11), 1845-1864.

Cramer, C. (2003). Does inequality cause conflict? *Journal of International Development, 15*(4), 397-412.

Dal Bó, E., & Dal Bó, P. (2008). Workers, Warriors, and Criminals: Social Confict in General Equilibrium. Unpublished paper, Stanford University and NBER.

Davis, D. R., & Weinstein, D. (2002). Bones, Bombs, and Breakpoints: The Geography of Economic Activity. *American Economic Review, 92*(5).

de Ree, J., & Nillesen, E. (2006). Aiding Violence or Peace? The Impact of Foreign Aid on the Risk of Civil Conflict in Sub-Saharan Africa. Working Papers 06-09, Utrecht School of Economics.

Deaton, A., & Miller, R. I. (1995). *International commodity prices, macroeconomic performance, and politics in Sub-Saharan Africa*. Princeton, NJ: International Finance Section, Department of Economics, Princeton University.

Dhillon, A., & Peralta, S. (2002). Economic Theories of Voter Turnout. *The Economic Journal, 112*, F332-F352.

Do, Q.-T., & Iyer, L. (2007). Poverty, Social Divisions and Conflict in Nepal. Unpublished working paper, Harvard Business School.

Dube, O., & Vargasz, J. F. (2007). Commodity Price Shocks and Civil Conflict: Evidence From Colombia. Unpublished working paper, Harvard University and UCLA.

Easterly, W., & Levine, R. (1997). Africa's growth tragedy: policies and ethnic divisions. *Quarterly Journal of Economics, 112*(4), 1203-1250.

Esteban, J., & Ray, D. (1999). Conflict and Distribution. *Journal of Economic Theory, 87*(2), 379-415.

Etzioni, A. (1975). *A Comparative Analysis of Complex Organizations: On Power, Involvement and their Correlates*. New York: The Free Press.

Fearon, J. D. (1995). Rationalist Explanations for War. *International Organization, 49*(3), 379-414.

Fearon, J. D. (2004). Why Do Some Civil Wars Last So Much Longer than Others? *Journal of Peace Research, 41*(3), 275-301.

Fearon, J. D. (2006). Ethnic Mobilization and Ethnic Violence. In B. R. Weingast & D. Wittman (Eds.), *Oxford Handbook of Political Economy*. Oxford: Oxford University Press.

Fearon, J. D. (2007). Economic development, insurgency, and civil war. In E. Helpman (Ed.), *Institutions and Economic Performance*. Cambridge: Harvard University Press.

Fearon, J. D., Kasara, K., & Laitin, D. D. (2007). Ethnic Minority Rule and Civil War Onset. *American Political Science Review, 101*(01), 187-193.

Fearon, J. D., & Laitin, D. D. (1996). Explaining Interethnic Cooperation. *The American Political Science Review, 90*(4), 715-735.

Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, Insurgency and Civil War. *American Political Science Review, 97*(1), 75-90.

Feddersen, T. J. (2004). Rational Choice Theory and the Paradox of Not Voting. *Journal of Economic Perspectives, 18*(1), 99-112.

Garfinkel, M. R. (1990). Arming as a strategic investment in a cooperative equilibrium. *American Economic Review, 80*, 50-68.

Garfinkel, M. R. (2004). On the Stability of Group Formation: Managing the Conflict Within. *Conflict Management and Peace Science, 21*(1), 43-68.

Garfinkel, M. R., & Skaperdas, S. (2007). Economics of Conflict: An Overview. In T. Sandler & K. Hartley (Eds.), *Handbook of Defense Economics* (1 ed., Vol. 2, pp. 649-709): Elsevier.

Gartzke, E. (2003). War Is in the Error Term. *International Organization, 53*(3), 567-587.

Gates, S. (2002). Recruitment and Allegiance: The Microfoundations of Rebellion. *Journal of Conflict Resolution, 46*(1), 111-130.

Gellner, E. (1983). *Nations and Nationalism*: Blackwell Publishers.

Gersony, R. (1997). *The Anguish of Northern Uganda: Result of a Field-based Assessment of the*

Civil Conflicts in Northern Uganda: Report submitted to United States Embassy, Kampala.

Ghobarah, H. A., Huth, P., & Russett, B. (2003). Civil Wars Kill and Maim People--Long After the Shooting Stops. *American Political Science Review, 97*(189-202).

Ghobarah, H. A. H. A., Huth, P., & Russett, B. (2004). The post-war public health effects of civil conflict. *Social Science & Medicine, 59*(4), 869-884.

Gilchrist, S., & Williams, J. C. (2004). Transition Dynamics in Vintage Capital Models: Explaining the Postwar Catch-up of Germany and Japan. *Federal Reserve Bank of San Francisco Working Paper, 2004-14*.

Gilmore, E., Gleditsch, N. P., Lujala, P., & RØd, J. K. (2005). Conflict Diamonds: A New Dataset. *Conflict Management and Peace Science, 22*(3), 257-272.

Gleditsch, K. S. (2007). Transnational Dimensions of Civil War. *Journal of Peace Research, 44*(3), 293.

Gleditsch, N. P., Wallensteen, P., Eriksson, M., Sollenberg, M., & Strand, H. (2002). Armed Conflict 1946-2001: A New Dataset. *Journal of Peace Research, 39*(5).

Goodwin, J. (2006). A Theory of Categorical Terrorism. *Social Forces, 84*(4), 2027-2046.

Gramsci, A. (1971). *Selections from the prison notebooks*. London: Lawrence and Wishart.

Grossman, H. I. (1991). A General Equilibrium Model of Insurrections. *The American Economic Review, 81*(4), 912-921.

Grossman, H. I. (1992). Foreign aid and insurrection. *Defence and Peace Economics, 3*(4), 275-288.

Grossman, H. I. (1999). Kleptocracy and revolutions. *Oxford Economic Papers, 51*, 267-283.

Guidolin, M., & La Ferrara, E. (2007). Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms? *American Economic Review, 97*, 1978-1993.

Gurr, T. R. (1971). *Why Men Rebel*. Princeton: Princeton University Press.

Gurr, T. R., & Moore, W. H. (1997). Ethnopolitical Rebellion: A Cross-Sectional Analysis of the 1980s with Risk Assessments for the 1990s. *American Journal of Political Science, 41*(4), 1079-1103.

Gyimah-Brempong, K., & Traynor, T. L. (1999). Political instability, investment and economic growth in Sub-Saharan Africa. *Journal of African Economies, 8*(1), 52-86.

Haavelmo, T. (1954). *A Study in the Theory of Economic Evolution*. Amsterdam: North-Holland.

Hamilton, K., & Clemens, M. (1999). Genuine Savings Rates in Developing Countries. *The World Bank Economic Review, 13*(2), 333-356.

Hanson, M. A. (2008). The Economics of Roadside Bombs. College of William & Mary, unpublished working paper.

Hassner, R. E. (2003). "To Halve and to Hold": Conflicts over Sacred Space and the Problem of Indivisibility. *Security Studies, 12*(4), 1-33.

Hearst, N., Newman, T. B., & Hulley, S. B. (1986). Delayed effects of the military draft on mortality. A randomized natural experiment. *New England Journal of Medicine, 314*(10), 620-624.

Hegre, H., Ellingsen, T., Gates, S., & Gleditsch, N. P. (2001). Toward a Democratic Civil Peace? Democracy, Political Change, and Civil War, 1816-1992. *American Political Science Review, 95*(1), 33-48.

Hegre, H., & Sambanis, N. (2006). Sensitivity Analysis of Empirical Results on Civil War Onset. *Journal of Conflict Resolution, 50*(4), 508-535.

Herbst, J. (2000). *States and Power in Africa*. Princeton: Princeton University Press.

Hess, G. D. (2003). The Economic Welfare Cost of Conflict: An Empirical Assessment. *CESifo Working Paper Series, 852*.

Hirshleifer, J. (1988). The analytics of continuing conflict. *Snythese, 76*, 201-233.

Hirshleifer, J. (1989). Conflict and rent-seeking functions: Ratio versus difference models of relative success. *Public Choice, 63*, 101-112.

Horowitz, D. L. (1985). *Ethnic Groups in Conflict*. Berkeley: University of California Press.

Humphreys, M. (2003). *Economics and Violent Conflict*. Cambridge, MA: Program on Humanitarian Policy and Conflict Research (HPCR).

Humphreys, M. (2005). Natural resources, conflict, and conflict resolution: uncovering the mechanisms. *Journal of Conflict Resolution, 49*, 508-537.

Humphreys, M., & Weinstein, J. M. (2004). What the Fighters Say: A Survey of Ex-combatants in Sierra Leone, June-August 2003. Center for Global Security and Democracy, Rutgers.

Humphreys, M., & Weinstein, J. M. (2005). *Disentangling the Determinants of Successful Demobilization and Reintegration*. Paper presented at the Annual Meeting of the American Political Science Association.

Humphreys, M., & Weinstein, J. M. (forthcoming). Who Fights? The Determinants of Participation in Civil War. *American Political Science Review*.

Imbens, G. W., & van der Klaauw, W. (1995). Evaluating the Cost of Conscription in the Netherlands. *Journal of Business & Economic Statistics, 13*(2), 207-215.

Iyengar, R., & Monten, J. (2008). Is There an "Emboldenment" Effect? Evidence from the Insurgency in Iraq. Unpublished working paper, Harvard University.

Jones, B. F., & Olken, B. A. (2007). Hit or Miss? The Effect of Assassinations on Institutions and War. *NBER Working Paper, 13102*.

Justino, P. (2007). On the Links between Violent Conflict and Household Poverty: How Much Do We Really Know? *MICROCON Research Working Paper, 1*.

Justino, P., & Verwimp, P. (2006). Poverty Dynamics, Violent Conflict and Convergence in Rwanda. *Households in Conflict Network Working Paper, 16*.

Kaldor, M. (1999). *New and old wars. Organized violence in a global era*. Cambridge, UK: Polity Press.

Kalyvas, S. N. (2005). Warfare in Civil Wars. In I. Duyvesteyn & J. Angstrom (Eds.), *Rethinking the Nature of War*. Abingdton: Frank Cass.

Kalyvas, S. N. (2006). *The Logic of Violence in Civil War*. New York: Cambridge University Press.

Kalyvas, S. N. (2007). Civil Wars. In Boix & Stokes (Eds.), *The Oxford Handbook of Comparative Politics* (pp. 416-434).

Kalyvas, S. N., & Kocher, M. A. (2006). How free is "free-riding" in civil wars? Violence, insurgency, and the collective action problem.

Kaplan, R. D. (1994, February). The coming anarchy. *Atlantic Monthly,* 44–76.

Kennan, J., & Wilson, R. (1993). Bargaining with Private Information. *Journal of Economic Literature, 31*(1), 45-104.

King, G., & Zeng, L. (2001). Logistic Regression in Rare Events Data. *Political Analysis, 9*(2), 137.

Knight, M., Loayza, N., & Villanueva, D. (1996). The Peace Dividend: Military Spending Cuts and Economic Growth. *World Bank Policy Research Paper, 1577*.

Krueger, A. B., & Maleckova, J. (2003). Education, Poverty and Terrorism: Is There a Causal Connection? *The Journal of Economic Perspectives, 17*(4), 119-144.

Laitin, D. D. (2005). Random Narratives. Unpublished manuscript, Stanford University.

Laitin, D. D. (2007). *Nations, States, and Violence*: Oxford University Press.

Le Billon, P. (2001). The Political Ecology of War: Natural Resources and Armed Conflicts. *Political Geography, 20*(5), 561-584.

Le Billon, P. (2005). *Fuelling War: Natural Resources and Armed Conflicts*. New York: Routledge.

Leonard, D. K., & Straus, S. (2003). *Africa's Stalled Development: International Causes and Cures*. London: Lynne Rienner Publishers.

Levine, R., & Renelt, D. (1992). A Sensitivity Analysis of Cross-Country Growth Regressions. *American Economic Review, 82*, 942-963.

Lichbach, M. I. (1994). What makes Rational Peasants Revolutionary?: Dilemma, Paradox, and Irony in Peasant Collective Action. *World Politics, 46*(3), 383-418.

Lichbach, M. I. (1995). *The Rebel's Dilemma*. Ann Arbor, MI: University of Michigan Press

Lijphart, A. (1971). Comparative Politics and the Comparative Method. *American Political Science Review, 65*(3), 682-693.

Lucas, R. E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics, 22*, 3-42.

Macours, K. (2008). Increasing Inequality and Civil Conflict in Nepal. Unpublished working paper, Johns Hopkins University.

Mankiw, G. N., Romer, D., & Weil, D. N. (1992). A contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics, 107*, 407-437.

Marshall, M. G., & Gurr, T. R. (2005). *Peace and Conflict 2005: A Global Survey of Armed Conflicts, Self-Determination Movements, and Democracy*. College Park: Center for International Development and Conflict Management, University of Maryland.

Marshall, M. G., & Jaggers, K. (2006). Polity IV Project, Political Regime Characteristics and Transitions, 1800–2004 (Publication., from Maryland: Center for International Development and Conflict Management, University of Maryland, College Park

Mason, T. D., & Krane, D. A. (1989). The Political Economy of Death Squads: Toward a Theory of the Impact of State-Sanctioned Terror. *International Studies Quarterly, 33*(2), 175-198.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*(3), 227-238.

McBride, M., & Skaperdas, S. (2008). Explaining Conflict in Low-Income Countries: Incomplete Contracting in the Shadow of the Future. *CESifo Working Paper Series, 1636*.

Miguel, E. (2007). Poverty and Violence: An Overview of Recent Research and Implications for Foreign Aid. In L. Brainard & D. Chollet (Eds.), *Too Poor for Peace? Global Poverty, Conflict and Security in the 21st Century*. Washingon, DC: Brookings Institution Press.

Miguel, E., & Gugerty, M. K. (2005). Ethnic Diversity, Social Sanctions, and Public Goods in Kenya. *Journal of Public Economics, 89*, 2325-2368.

Miguel, E., & Roland, G. (2005). *The Long Run Impact of Bombing Vietnam*.Unpublished manuscript.

Miguel, E., Satyanath, S., & Sergenti, E. (2004). Economic Shocks and Civil Conflict: An In-

strumental Variables Approach. *Journal of Political Economy, 112*(4), 725-753.

Montalvo, J. G., & Reynal-Querol, M. (2005). Ethnic polarization, potential conflict, and civil wars. *The American Economic Review, 95*(3), 796-816.

Montalvo, J. G., & Reynal-Querol, M. (2007). Fighting against Malaria: Prevent Wars while Waiting for the HMiraculous" Vaccine. *The Review of Economics and Statistics, 89*(1), 165-177.

Moore, B. (1993). *Social Origins of Dictatorship and Democracy*: Beacon Press.

Morris, S., & Shin, H. S. (1998). Unique Equilibria in a model of self-fulfilling currency attacks. *American Economic Review, 88*(3), 587-597.

Murdoch, J. C., & Sandler, T. (2004). Civil Wars and Economic Growth: Spatial Patterns. *American Journal of Political Science, 48*(1), 138-151.

Murshed, S. M., & Gates, S. (2005). Spatial-Horizontal Inequality and the Maoist Insurgency in Nepal. *Review of Development Economics, 9*(1), 121-134.

Olson, M. (1971). The Logic of Collective Action: Harvard University Press.

Organski, A. F. K., & Kugler, J. (1977). The Costs of Major Wars: The Phoenix Factor. *American Political Science Review, 71*(4), 1347-1366.

Organski, A. F. K., & Kugler, J. (1980). *The War Ledger*. Chicago: University of Chicago Press.

Østby, G. (2005). *Horizontal Inequalities and Civil Conflict*. Paper presented at the 46th Annual Convention of the International Studies Association.

Ostrom, E. (1990). *Governing the common: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Paige, J. M. (1975). *Agrarian Revolution: Social movements and export agriculture in the underdeveloped world*. New York: Free Press New York.

Petersen, R. D. (2001). *Resistance and Rebellion: Lessons from Eastern Europe*. Cambridge: Cambridge University Press.

Popkin, S. L. (1979). *The Rational Peasant: The Political Economy of Rural Society in Vietnam*. Berkeley: University of California Press.

Popkin, S. L. (1988). Political Entrepreneurs and Peasant Movements in Vietnam. In M. Taylor (Ed.), *Rationality and Revolution* (pp. 9-62). Cambridge: Cambridge University Press.

Posner, D. N. (2004a). Measuring Ethnic Fractionalization in Africa. *American Journal of Political Science, 48*(4), 849-863.

Posner, D. N. (2004b). The Political Salience of Cultural Difference: Why Chewas and Tumbukas Are Allies in Zambia and Adversaries in Malawi. *American Political Science Review, 98*(04), 529-545.

Powell, R. (2002). Bargaining Theory and International Conflict. *Annual Review of Political Science, 5*(June), 1-30.

Powell, R. (2006). War as a Commitment Problem. *International Organization, 60*, 169-203.

Przeworski, A., Alvarez, M. E., Cheibub, J. A., & Limongi, F. (2000). *Democracy and Development: Political Institutions and Wellbeing in the World 1950-1990*. Cambridge: Cambridge University Press.

Punamäki, R.-L., Qouta, S., & El Sarraj, E. (1997). Relationships Between Traumatic Events, Children's Gender, Political Activity, and Perceptions of Parenting Styles. *International Journal of Behavioral Development, 21*(1), 91-109.

Ray, D. (1998). *Development Economics*. Princeton: Princeton University Press.

Reno, W. (1999). *Warlord Politics and African States*: Lynne Rienner Publishers.

Roberts, L., Ngoy, P., Mone, C., Lubula, C., Mwezse, L., Zantop, M., et al. (2003). *Mortality in the Democratic Republic of Congo: Results from a nationwide survey*. New York: International Rescue Committee.

Rodrik, D. (1999). Where Did All the Growth Go? External Shocks, Social Conflict and Growth Collapses. *Journal of Economic Growth*.

Roemer, J. E. (1985). Rationalizing Revolutionary Ideology. *Econometrica, 53*(1), 85-108.

Ross, M. L. (2004a). How Does Natural Resource Wealth Influence Civil War? Evidence from 13 Cases. *International Organization, 58*(35-67).

Ross, M. L. (2004b). What Do We Know about Natural Resources and Civil War? *Journal of Peace Research, 41*, 337-356.

Ross, M. L. (2006). A Closer Look at Oil, Diamonds, and Civil War. *Annual Review of Political Science, 9*, 265-300.

Sachs, J. (2005). *The End of Poverty: Economic Possibilities for Our Time*: Penguin Press.

Sala-i-Martin, X. X. (1997). I Just Ran Two Million Regressions. *The American Economic Review, 87*(2), 178-183.

Salehyan, I., & Gleditsch, K. S. (2006). Refugees and the Spread of Civil War. *International Organization, 60*(02), 335-366.

Sambanis, N. (2001). Do Ethnic and Nonethnic Civil Wars Have the Same Causes? A Theoretical and Empirical Inquiry (part I). *Journal of Conflict Resolution, 45*(3), 259-282.

Sambanis, N. (2004). What is Civil War? Conceptual and Empirical Complexities of an Operational Definition. *Journal of Conflict Resolution, 48*(6), 814-858.

Sambanis, N. (2005). Conclusion: Using Case Studies to Refine and Expand the Theory of Civil War. In P. Collier & N. Sambanis (Eds.), *Understanding Civil War: Evidence and Analysis* (Vol. 1). Washington, DC: World Bank.

Sandler, T., & Enders, W. (2004). An economic perspective on transnational terrorism. *European Journal of Political Economy, 20*(2), 301-316.

Sawyer, A. (2004). Violent conflicts and governance challenges in West Africa: the case of the Mano River basin area. *The Journal of Modern African Studies, 42*(03), 437-463.

Sawyer, A. (2005). *Beyond plunder: toward democratic governance in Liberia*. Boulder, CO: L. Rienner Publishers, Inc.

Schneider, G., & Wiesehomeier, N. (2007). Ethnic Polarization, Potential Conflict, and Civil Wars: Comment. Unpublished working paper, University of Konstanz.

Scott, J. C. (1976). *Moral Economy of the Peasant: Rebellion and Subsistence in South East Asia*. New Haven: Yale University Press.

Shemyakina, O. (2006). The Effect of Armed Conflict on Accumulation of Schooling: Results from Tajikistan. *Households in Conflict Network Working Paper, 12*.

Singer, J. D., & Small, M. (1994). Correlates of War Project: International and Civil War Data, 1816-1992. *Inter-university Consortium for Political and Social Research (ICPSR) Study, 9905*

Skaperdas, S. (1992). Cooperation, Conflict, and Power in the Absence of Property Rights. *American Economic Review, 82*(4), 720-739.

Skaperdas, S. (2008). An economic approach to analyzing civil wars. *Economics of Governance, 9*, 25-44.

Smith, L. A., Gambette, C., & Langley, T. (2004). *Conflict Mapping in Sierra Leone: Violations of International Humanitarian Law from 1991 to 2002*: No Peace Without Justice.

Stedman, S. J. (1997). Spoiler Problems in Peace Processes. *International Security, 22*(2), 5-53.

Stewart, F. (2001). *Horizontal Inequalities: A Neglected Dimension of Development*: United Nations University, World Institute for Development Economics Research.

Svensson, J. (1998). Investment, property rights and political instability: Theory and evidence. *European Economic Review, 42* 1317-1341.

Tilly, C. (1975). *The Formation of National States in Western Europe*. Princeton: Princeton University Press.

Tilly, C. (1992). *Coercion, Capital, and European States, AD 990–1992*. Cambridge, MA: Blackwell.

Todaro, M. (1999). *Economic Development* (7 ed.). Reading MA: Addison Wesley.

Valentine, T. (1993). Drought, Transfers, Entitlements and Income Distribution: The Botswana Experience. *World Development, 21*(1), 109-126.

Verwimp, P. (2003). Testing the Double-Genocide Thesis for Central and Southern Rwanda. *Journal of Conflict Resolution, 47*(4), 423.

Verwimp, P. (2005). An economic profile of peasant perpetrators of genocide Micro-level evidence from Rwanda. *Journal of Development Economics, 77*(2), 297-323.

Vreeland, J. R. (forthcoming). The Effect of Political Regime on Civil War: Unpacking Anocracy. *Journal of Conflict Resolution*.

Weinstein, J. M. (2005). Resources and the Information Problem in Rebel Recruitment. *Journal of Conflict Resolution, 49*, 598-624.

Weinstein, J. M. (2007). *Inside Rebellion*. Cambridge: Cambridge University Press.

Wimmer, A., & Min, B. (2006). From Empire to Nation-State: Explaining Wars in the Modern World, 18162001. *American Sociological Review, 71*(6), 867-897.

Wood, E. J. (2003). *Insurgent Collective Action and Civil War in El Salvador*. New York: Cambridge University Press.

Young, A. (2005). The Gift of Dying: The Tragedy of Aids and the Welfare of Future African Generations. *Quarterly Journal of Economics, 120*, 243-266.

Zinn, A. (2005). Theory versus reality: Civil war onset and avoidance since 1960. In P. Collier & N. Sambanis (Eds.), *Understanding Civil War: Evidence and Analysis* (Vol. 1, pp. 89-122). Washington, DC: World Bank.

Figure 1: The distribution of civil war or conflict years across countries, 1960-2006
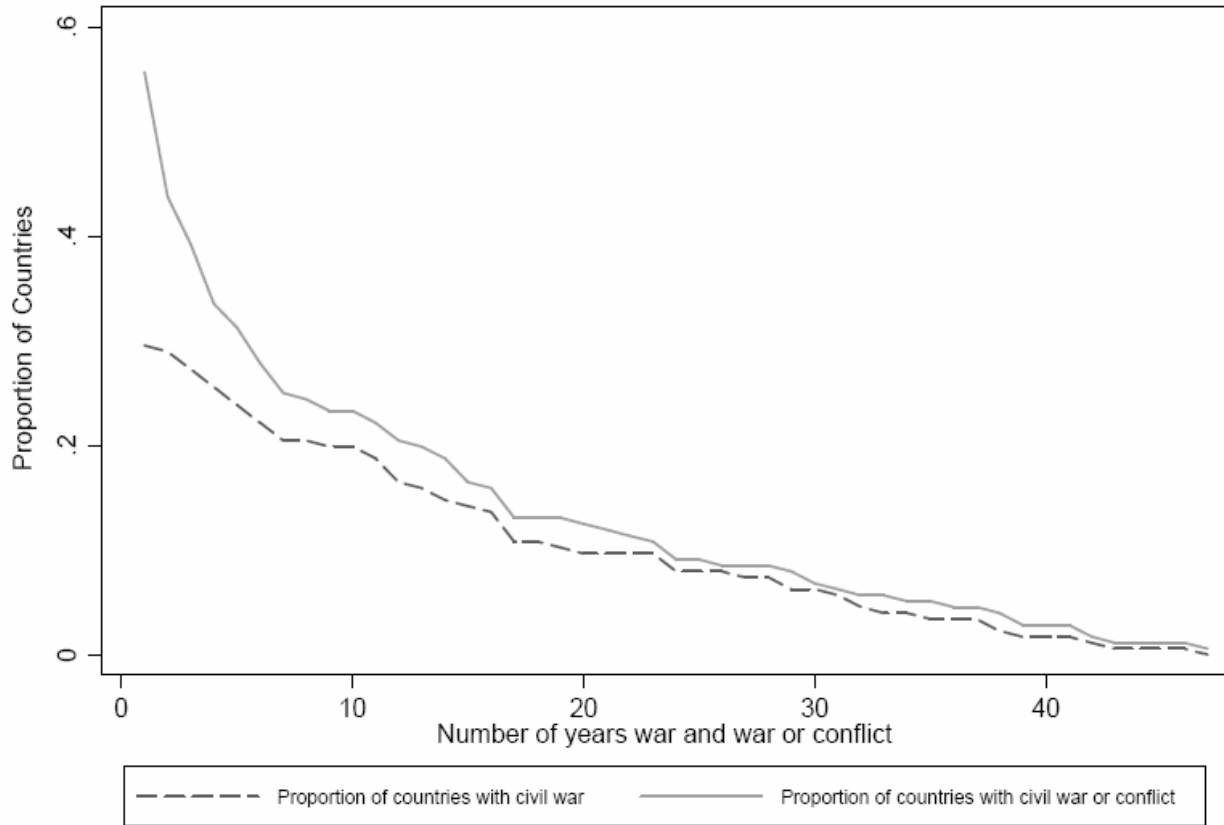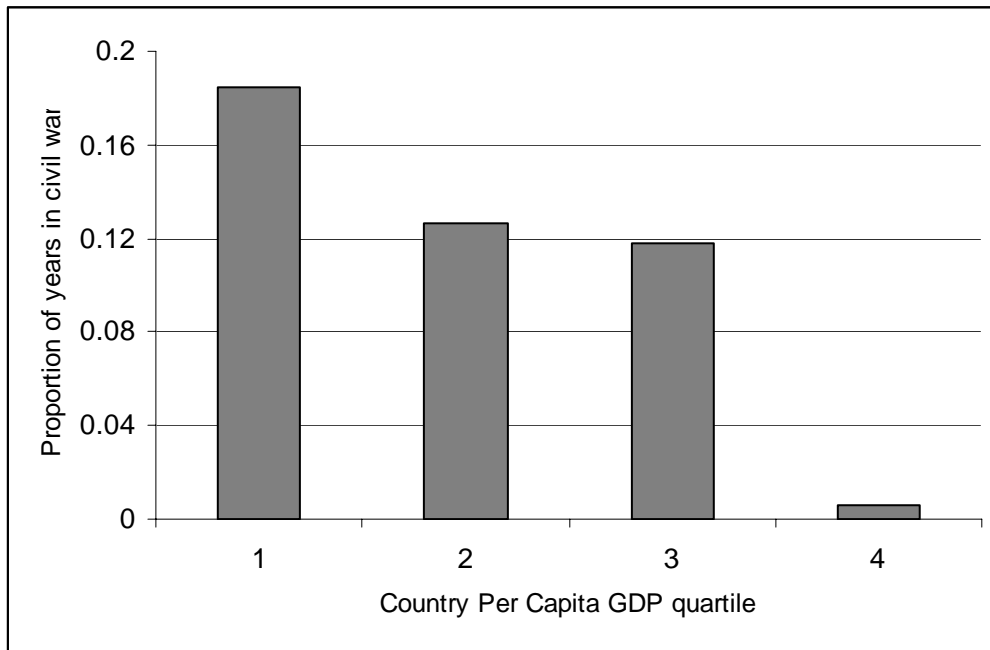

Source: PRIO

Figure 2: Proportion of countries with an active civil war or civil conflict, 1960-2006

Source: PRIO

Figure 3: Conflict war by country income per capita, 1960-2006

Sources: PRIO and WDI.