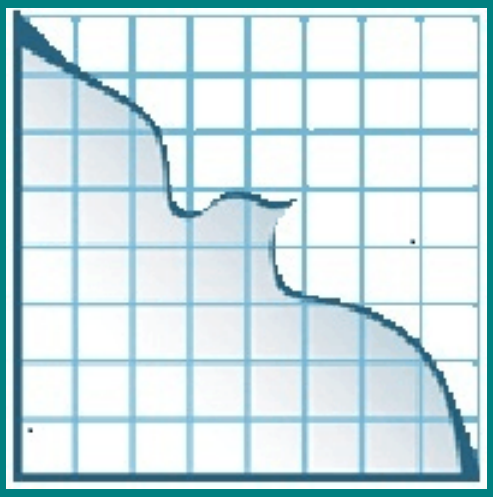
The Economics of Peace and Security Journal



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The need to be governed: Governance and violence in conflict contexts

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Abstract

This article analyses the relationship between governance and violence in light of the *World Development Report 2017* on Governance and the Law. The article discusses the approach taken by the *Report* to link governance and violence and highlights the importance of new research and findings on forms of wartime governance, and their implications for international politics and development interventions in conflict and postconflict contexts.

"Today's governance is the child of yesterday's violence."
—World Bank (2017, p. 112)

Governance is as old as humanity itself. Across the centuries, different forms of social organization have emerged as a result of interactions between those who (intend to) rule and those who are ruled. Walter Lippmann, quoted in Samuel Huntington's pivotal study on *Political Order in Changing Societies*, wrote: "I do know that there is no greater necessity for men who live in communities than that they be governed, self-governed if possible, well-governed if they are fortunate, but in any event, governed."[1]

Many forms of governance have been shaped by violence. Throughout history, governance structures and violence have been intertwined. Violence has often been used in strategic ways by political actors to access power and resources. Sustaining warfare against challengers and consolidating power requires, in turn, financial and human support. In time, the need for a support basis to wage war led strongmen to develop a variety of structures to levy taxes on local populations in exchange for protection and public good provision. In due course, these interactions evolved into the institutions of governance we know today.[2]

As violence shapes governance, so governance shapes violence. The Weberian monopoly of violence in the hands of the state that characterizes Western societies today is a product of attempts by different rulers to manage the use of violence as a form of exercising political and territorial control and of consolidating power. The systems of governance we observe today are effectively "the child of yesterday's violence." In places where this monopoly has been shattered, violence in its various forms is "politics by other means," used to shape the distribution of economic, social, and political power among social groups and to define the norms of behavior, values, and attitudes that underlie it.[3]

This close relationship between governance and violence has been brought into the center of development policy by the *World Development Report 2017* in its chapter on governance for security, itself a follow-up to the landmark *World Development Report 2011* on conflict, security, and development. The 2011 *Report* placed the analysis of political violence firmly within development policy. For a long time, development and violent conflict had been largely separate areas of scholarly inquiry and policy intervention. Development was the realm of social scientists working on the problems of poverty and economic growth in developing countries, whereas violent conflict concerned political theorists, political historians, and international relations scholars working on issues related to political order, diplomatic relations, and wars. At the policy level, those working on the challenges faced by developing countries paid but limited attention to the dynamics of violent conflict since few countries affected by war and violence were recipients of international aid. This separation of fields started to shift in the early 1990s, following the political changes caused by the fall of the Berlin Wall and the collapse of the former USSR. However, violent conflict and development became fully integrated in research and policy only once it was recognized that the only countries unable to reach the United Nations' Millennium Development Goals by 2015 all were affected by civil wars and high levels of violence. At that point, the World Bank published the *World Development Report 2011* which stated that "insecurity not only remains, [but] has become a primary development challenge of our time. One-and-a-half billion people live in areas affected by fragility, conflict, or large-scale, organized criminal violence, and no low-income fragile or conflict-affected country has yet to achieve a single United Nations Millennium Development Goal." The *Report* adds that "strengthening legitimate institutions and governance to provide citizen security, justice, and jobs is crucial to break

cycles of violence." Since then, the institutional framework provided by the 2011 *Report* has been at the heart of most policy interventions in conflict-affected and postconflict countries. However, while providing much needed empirical evidence and conceptual theorization of the close relationship between development and violent conflict, the 2011 *Report* fell short of providing a clear analysis about what these "legitimate institutions and governance" would look like on the ground. Also, it risked that its approach would lead to a perception that conflict-affected countries were mere blank slates ready for the implementation of new and effective institutions.[4]

Six years later, the 2017 *Report* addressed many of these gaps and attempts to provide a more grounded institutional framework to address better the joint challenge of improving governance and of reducing violence in fragile and conflict-affected countries. To this purpose, chapter four of the *Report* asks if and how governance can solve the problems of violence in society. This question is addressed in the usual linear approach adopted in many high-level policy reports. First, the *Report* argues that violence is reduced when individuals, groups, and governments have incentives that will encourage abstinence from violence, that is, solving social conflict through courts and for the rule of law to become the norm. Second, the *Report* postulates that violence is reduced when the institutions of governance solve social cooperation and commitment problems (i.e., encourage people to learn to live together and to successfully enforce the non-use of violence by all social groups). Three factors shape these two processes. The first is the relative distribution of power among individuals and groups that hold conflicting preferences. The second is the bargaining arena where conflicting interests are mediated and policy choices are made and implemented. The third has to do with existing barriers to entry in that arena. Violent conflict thus is conceptualized in the 2017 *Report* as the result of three types of breakdowns in governance: (1) unconstrained power of individuals, groups, and governments; (2) failed agreements between participants in the bargaining arena; and (3) the exclusion of relevant individuals and groups from the bargaining arena.

The *Report* then specifies the types of institutions and modes of institutional design and operation that may be able to improve security. The first is through sanction and deterrence institutions that increase the cost of violence and, in time, change social norms and attitudes toward violence. The second is through power-sharing institutions which will increase the benefits of security across social groups, thereby raising the likelihood of social cooperation within and between social groups. The third is through the effective implementation of redistributive institutions which will strengthen the social contract between state and citizens in ways that coopt the engagement of elites, increase generalized trust in government institutions, and improve trust among social groups. The fourth is through (formal and informal) dispute resolution institutions and how these may be designed and implemented to reduce incentives to use violence to protect property rights.

This article critically examines the relationship between governance and violence in light of the *World Development Report 2017* on governance and the law. The article discusses the approach taken by the *Report* to link governance and violence and highlights the importance of new research findings on forms of wartime governance as well as their implications for international politics and development interventions in conflict and postconflict contexts. It points out, in particular, that violence and governance are endogenous—each shapes the other—and that one cannot suggest, demand, or impose "new" forms of governance on violence-ridden societies as if they were unconstrained by their own history and free to adopt any proffered solution.

These are sensible prescriptions that can be translated into specific policy actions, something that had been challenging in the more general institutional framework proposed by the 2011 *Report*. However, chapter four of the 2017 *Report* goes further and brings to light an important aspect of institutional and governance reform in conflict-affected countries that has to date remained underresearched, namely that governance institutions are, in fact, endogenous to violent conflict dynamics and processes and that, therefore, "institution-building processes in post-conflict settings must first and foremost understand and build upon the institutions that emerge from the conflict itself."[5]

Governance happens amidst violent conflict[6]

Conflict-affected countries are sites of intense institutional change rather than simply arenas of destruction and anarchy that breed terrorism and extremism, the typical way in which conflict contexts are portrayed. Largely ignored in postconflict policy interventions, processes of institutional change during conflict are central to explaining why armed violence persists, why conflicts may mutate into different forms of violence and criminality in their aftermath, and why peace sometimes but not always prevails. Institutional change takes place when different political actors contest and eventually control existing social, economic, and political structures, or create new ones, to advance their war objectives. Processes of institutional change generally take place locally but can cover substantial parts of the whole of a country or territory. This was the case, for instance, for the Liberation Tigers of Tamil Eelam (LTTE) in northern Sri Lanka and the Tigray People's Liberation Front

(TPLF) in Ethiopia. In both cases war institutions evolved into government institutions in the aftermath of conflict.[7]

Such institutional changes, which take place across most conflicts under various guises, have profound effects on the survival and security of ordinary people and on the emergence of social, economic, and political organizations and structures in contested areas. They remain underresearched, however, largely because armed conflict tends to be theorized as a departure from social and political order rather than as intrinsic to the creation and change of institutions and order. In fact, a large literature has focused on the analysis of armed conflict as a symptom of "state collapse" or "state failure." But, as I have argued elsewhere, the collapse of state institutions is not always (if ever) associated with the collapse of social, economic, and political order or governance. In reality, a myriad of political actors occupy the space left by weak or absent state institutions by either coopting existing institutions or creating new institutions, organizations, and systems that advance both war and political objectives. When state institutions are contested, weak, or absent, other actors take over that space and govern. These actors often are violent, or else rely on the threat of violence, but this is not the case everywhere nor at all times. In fact, as theorized and demonstrated empirically by Stathis Kalyvas, violence tends to be *reduced* in areas where armed groups exercise full territorial control even though conflict may be ongoing.[8]

Recent research has offered new insights and detailed empirical evidence about some of the complex relations that take place between and among states, armed nonstate groups, and local populations and about the institutional and development implications of their interactions. In the case of Angola, for example, a recent paper shows that former soldiers that belonged to armed factions that established forms of governance and interactions with local populations during the 1975–2002 civil war were more likely to participate in forms of local governance and collective action twelve years after the end of the war. In Colombia, research finds that forms of governance and rule by rebel groups outside the state apparatus facilitated the recruitment of fighters into their groups but resulted in high levels of disregard for the rule of law in the postconflict period in communities where armed groups were present during the conflict. Also for the case of Colombia, other research discusses how the presence of and rule by armed groups is associated with increases in the participation of community members in local political organizations. The researchers show that this outcome is driven by forms of coercion used by armed groups to capture local organizations for strategic war purposes because increases in participation in political organizations (by attending meetings) are accompanied by reductions in participation of community members in local decisionmaking processes. Similarly, research documents how rebel groups in the eastern Democratic Republic of the Congo (DRC) engage in forms of direct and indirect rule of local communities, and additional research describes how systems of taxation imposed by armed groups across the same region (re)shape who holds the monopoly of violence and control over parts of the territory. At the cross-country level, too, it has been argued that rebel governance increases collective action and social mobilization among civilians, which may spur demand for democracy in the postconflict period.[9]

Institutional change in times of violent conflict remains underresearched, largely because armed conflict tends to be theorized as a departure from social and political order rather than as intrinsic to the creation and change of institutions and order.

A related body of literature has shown evidence for the emergence and formation of social and political order and forms of governance not only in civil wars but also in other seemingly ungoverned spaces, such as the regulation of protection markets by Mafia-type organized crime groups and the development of governance institutions by prison gangs, pirate organizations, and urban slum gangs.[10]

All these, and other, studies document how state and armed nonstate groups establish forms of governance to secure, control, and rule over territories, markets, and communities, establish alliances or compete over power and resources, and manage civilian relations across social groups. Wartime governance, in turn, is shaped by institutions—different in each case, of course—that establish boundaries to the power exercised by local political authorities, shape shifting economic, social, and political alliances, frame the behavior and unfolding beliefs of local populations, and are constantly renegotiated depending on shifts in power among competing actors in given localities. Forms of wartime governance include the provision of public services (e.g., access to water, electricity, and other public goods), building infrastructure (such as schools, health centers, wells, and roads), support for local conflict resolution (e.g., over land and in day-to-day social conflicts and disputes among community members), the provision of security (including the provision of arms for self-defense and the regulation of criminal activities such as theft, drug use, and domestic violence), the organization of systems of taxation, and the imposition of norms of behavior and controls over civilian social life. These forms of wartime governance often ensure that armed groups are obeyed and deemed legitimate authority locally. Examples of such forms

of wartime governance have been exercised by a myriad of armed groups including the FARC in Colombia, the LTTE in Sri Lanka, the Sandero Luminoso in Peru, Hamas in Palestine, Hezbolah in Lebanon, El-Shabaab in Somalia, the Taliban in Afghanistan and, more recently, ISIS across Syria and Iraq. Often, these forms of governance that emerge during conflict become ingrained in the social, economic, and political fabric of local communities, further strengthening the institutional and fighting capacity of governing armed groups, with important consequences for the persistence of many violent conflicts across the world and the potential reigniting of violent conflict in the aftermath of peace agreements.[11]

Many factors influence the decision of armed groups to establish forms of wartime governance. First, armed groups may decide to rule and govern when this benefits their strategic objectives. At the very least, all armed groups need to extract revenue to fund fighting and territorial expansion. Because revenue extraction is likely to be greater in situations where the group exercises the monopoly of violence, some armed actors may choose to levy taxes in exchange for the provision of (at the very minimum) security. Some actors may extend their ruling to the provision of other, nonsecurity, public goods and services. Such efforts to establish, essentially, a social contract that ensures the financial survival of the armed group may, in turn, result in the emergence of political order, as postulated long ago by Mancur Olson and Charles Tilly. Second, forms of wartime governance may emerge in conflict contexts when a given political actor is accepted (or tolerated) and recognized by local populations as exercising sole authority and rule over a certain territory and the population within it. This is because wartime governance may offer a sense of legitimacy and certainty and may reflect civilian perceptions about the authorities that govern them. Civilians, in turn, may take advantage of intentions to govern and rule by armed groups in order to establish strategic social, economic, and political alliances with armed actors that will ensure their physical and economic survival during the war.[12]

Implications of wartime governance and challenges ahead

Independently of the final outcome, interactions between civilians, armed actors, and the state during violent conflict result in profound forms of institutional change that vary substantially across time and space. However, to date, limited research has attempted to understand these processes of institutional formation and change during wartime. Despite the popularity of state- and peacebuilding policy interventions in conflict-affected countries, we have very limited understanding of how formal and informal institutions operate in conflict settings, and how and for what purpose different political actors use different institutional strategies in contexts of warfare. These issues are, however, central to understanding processes of state-building in postconflict countries as the sustainability of peace and stability will depend to a large extent on the ability of central authorities to govern, protect, and provide for local populations. This ability is, in turn, likely to be shaped by the levels and functions of institutional systems in place during conflict and the types of political order and wartime governance associated with them which may range from purely extractive activities in return for protection against opposing factions to the provision of quasi-state functions.[13]

Given these considerations, it is urgent that state-building and development interventions in postconflict countries take more seriously into consideration how postconflict periods are shaped by forms of institutional change that emerge and operate during times of armed conflict. Stability, legitimacy, and inclusiveness rarely are built from scratch and largely are dependent on what institutions emerged during the conflict, how these were managed by different political actors and were perceived by local populations, and how they are incorporated into processes of state-building in the aftermath of the violence. Future research should therefore concentrate on providing strong theoretical frameworks regarding, and more empirical evidence on, the factors that may explain why, how, and which wartime institutions and forms of governance may result in violent conflict and instability persisting in some societies in the aftermath of peace agreements and yet sow the seeds of democracy and inclusiveness in others.[14]

Particular attention must be paid to three specific implications of wartime governance for processes of state-building in the postconflict period. The first area of inquiry has to do with the relationship between wartime governance (and the types of local political order associated to it) and how different population groups may perceive the legitimacy of different forms of authority during wartime and in its aftermath. This is important because perceptions of legitimacy regarding different political actors—whether new governments or defeated armed factions—are likely to shape in very fundamental ways the nature of the state in the postconflict period.[15]

Second, there is an urgent need to understand better the behavior of armed groups (state and nonstate alike) during the violence because this will provide key clues as to the potential for the armed group or the incumbent government to transition from military structures formed during conflict to organizations that are capable of providing public goods (such as security, justice, education, and health care), collect revenue in legitimate and accountable ways, maintain peace, and uphold

the rule of law in the aftermath of violent conflict. For instance, armed groups with limited claims to governance, such as the Lord's Resistance Army in Uganda, are unlikely to lay the seeds for state-building processes in the aftermath of violence. In contrast, other groups, including the Tigray People's Liberation Front (TPLF) in Ethiopia and the People's Movement for the Liberation of Angola (MPLA), went on to form reasonably stable governments.[16]

The third area of analysis is about the relationship between wartime governance and how governance institutions may persist across time. Political order built during a period of violent conflict may persist well after the end of fighting, with important implications for political stability, peace, and socioeconomic recovery. One current example is the fierce negotiations being conducted between the FARC and the government of Colombia over the terms of integration of ex-combatants in existing civilian structures. The negotiations are important because they may shape both the ability of the FARC to transform itself into a legitimate political party and the strength of the links between command structures and former combatants in the future.

The implications of these processes for countries emerging from civil war are not, however, well understood. Two implications may be particularly relevant for future research. First, any political order established in wartime may affect the strength and level of authority exercised by different political actors in the postconflict period by shaping the level of support they can expect from local populations should they decide to rebel again, or in peacetime elections to form a government. Second, wartime order and governance are likely to influence considerably the ability of new state institutions to operate and intervene in areas that either were under their control or under the control of nonstate armed groups during wartime. An urgent need exists to map and analyze these processes in detail across different conflict contexts and over time as conflict dynamics change and evolve.[17]

The policy implications are important. The potential effect and success of any intervention—either during the violence, or in its immediate aftermath or in the postconflict period to reduce violence—as well as the risk of future violence both depend on a well-grounded understanding of the relations, interactions, alliances, and power shifts that take place during (and due to) the violence. Understanding the wartime forms of institutional change and their implications is therefore key to the effectiveness of policy intervention in conflict settings. Wartime governance and the institutions associated to them mold the distribution of power configurations during conflict in ways that are likely to also mold power configurations in the postconflict period. These are, in turn, central to how and why policy interventions and recovery processes may succeed or fail in the aftermath of violent conflict.

A better understanding of the complex ways in which armed groups behave, compete, and make decisions, how different governance structures produce or limit the use of violence, how territories and populations are ruled and controlled, and how alliances are forged or contested across time, space, and different conflict contexts will allow policymakers to better identify policy entry points, spaces, and opportunities that may generate beneficial change. In this, it is important that policy actors and practitioners gain operational and practical knowledge about institutional factors that may facilitate the emergence of "spoilers" in the aftermath of conflict which may create the conditions for conflict renewal. Equally important is that more knowledge be gained about points of resilience that institutional change in wartime may have created—for example, social cooperation and experience with civic engagement and collective action in wartimes, forms of civilian resistance, and instances of community self-governing—and that can possibly be reinforced through well-designed and well-targeted policy intervention. Better knowledge about wartime forms of institutional change may in turn prevent the reigniting of violent conflict and ensure that interventions are better able to support stable and inclusive state-building processes in the aftermath of violent conflict.

Notes

This article is an extension of a key note address given at a workshop launch of the chapter on 'Governance for Security' of the *World Development Report 2017*, London, March 2017. The address, and this article, benefitted from comments from Deborah Wetzel (Senior Director, Governance Global Practice, World Bank), Luis-Filipe Lopez-Calva (co-director of the WDR 2017), Edouard Al-Dahdah (lead author of the chapter on Governance for Security), workshop participants, and an anonymous reviewer.

1. Lippmann, as quoted in Huntington (1968, p. 2).

2. Tilly (1975, 1992); Olson (1993).

3. Weberian monopoly: Acemoglu and Robinson (2006); North, Wallis, and Weingast (2009). Quote: World Bank (2017, p. 112).

4. World Bank reports: World Bank (2011; 2017). Berlin Wall and fall of the USSR: Seminal research by Collier and Hoeffler (2004) and Fearon and Laitin (2003) also contributed to shaping this shift in focus. Collier, *et al*. (2003) is an earlier example of attempts by the World Bank to link more closely processes of development and violent conflict. WDR 2011 quotes: World Bank (2011, pp. 1, 2). Blank slates: Justino (2013).

5. Quote: Justino (2013, p. 295).

6. Parts of this section are informed by the literature review and analysis included in the background paper to the WDR 2017 (Justino, 2016).

7. Institutional change takes place: Justino (2016). Sri Lanka: Mampilly (2011). Ethiopia: Young (1997).

8. Underresearched: Kalyvas (2006); Kalyvas, Shapiro, and Masoud (2008). Symptom: See, e.g., Milliken (2003); Ghani and Lockhard (2008). Argued elsewhere: Justino (2013). Full territorial control: Kalyas (2006).

9. Angola: Justino and Stojetz (2017). Colombia: Arjona (2016); Arjona, *et al*. (2017). Also for Colombia: Gáfaro, Ibáñez, and Justino (2014). DR Congo: Marchais, Sanchez de la Sierra, and Henn (2016). Additional research: Sanchez de la Sierra (2014). Cross-country level: Huang (2016).

10. Mafia-type groups: Gambetta (1996). Prison gangs: Skarbek (2014). Pirate organizations: Leeson (2007; 2009). Urban slum gangs: Venkatesh (2008; 2009).

11. This paragraph is based on Justino (2016) and Justino and Stojetz (2017).

12. Many factors: Justino (2016). Monopoly of violence: Sanchez de la Sierra (2014). Nonsecurity public goods: Arjona (2016). Social contract: Olson (1993); Tilly (1992). Legitimacy and certainty: Arjona (2016). Civilian perceptions: Bates (2008); Timmons (2005). Interactions: Justino (2009); Wood (2008). Sometimes, these interactions involve outright resistance and the use of violence by civilians against armed groups (see, e.g., Justino, 2009; Kaplan, 2017).

13. Sustainability depends on: Azam and Mesnard (2003); Bates, Grief, and Singh (2002). Likely to be shaped: Arjona (2016); Justino (2016).

14. Rarely built from scratch: Justino (2016).

15. Perceptions of legitimacy: Justino and Stojetz (2017); Arjona, *et al*. (2017).

16. Key clues: Mampilly (2011).

17. Political orders built: Mann (1986); Tilly (1992). Ability of new institutions to operate: Justino (2009); Mampilly (2011).

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Security and development: Shifting the focus to interpersonal violence

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Abstract

The focus in the security and development debate is on collective violence and the World Bank's *World Development Report 2017* is typical by mainly considering the effects of organized armed conflict. In this article I argue that interpersonal violence affects many more people globally and should receive more attention as well as aid. The adverse consequences from interpersonal violence on socioeconomic development are likely to be large but much of this violence is hidden in plain sight. Women and children are at particularly high risk of being victims of violence but since most of this violence is perpetrated in the domestic sphere it is less likely to affect the collective conscience.

In nine chapters the World Bank's *World Development Report 2017* (WDR 2017, for short) sets out the links among governance, law, and development. One of the chapters is devoted to governance and security. While the World Bank has published a previous flagship report—the *World Development Report 2011* on conflict, security, and development (WDR 2011) and has supported research on security—international development agencies still are only paying limited attention to the issue of security. This is, for example, evidenced by devoting very little aid to security-related issues. It is therefore commendable that security issues receive considerable attention in the WDR 2017. Chapter 4 starts with the important premise that security, governance, and power are tightly interlinked and that security is a precondition for development. The definition of security is broad and includes different forms of violence, ranging from civil war to homicides, gang warfare, mafia violence, riots, and on to various traditional practices that harm women. Yet, most of the focus is on civil wars and to a lesser extent on homicides.[1]

While civil war is now understood to be an important impediment to development, there is still little awareness of how other forms of violence harm societal development. This is despite a number of advocacy groups highlighting this issue (e.g., the Geneva Declaration and the Small Arms Survey). Interpersonal violence kills many more people every year than are killed in collective violence. Data from the World Health Organization (WHO) illustrate this point: In 2015 about 624,000 people were killed violently and about 75 percent of these were due to interpersonal violence and not the result of direct violence in collective violence, such as civil war. Moreover, the costs of interpersonal violence are much larger than those resulting from collective violence. A recent estimate suggests that only about two percent of the global costs of violence are due to wars.[2]

The aim of this article is to put the spotlight on some forms of interpersonal violence, sketch out some associated governance and law issues, and indicate how this knowledge can be used to reduce violence. While empirical evidence is used to support the arguments, it is important to stress that the data quality often is poor. Data on violence are available from international agencies such as the World Health Organization (WHO), the United Nations Office on Drugs and Crime (UNODC), and the World Bank. Most of this information is based on officially reported crime data but many acts of violence are never reported. Official data are therefore likely to underestimate the prevalence of violence, and hence it is useful to consult surveys to assess victimization rates, and the discussion of violence against women and children uses this type of information. The data presented in this article should therefore be understood as approximations to provide a sense of magnitude of the problem and to enable a comparison across different countries and regions.

The available evidence suggests that although violence exists in every society, low incomes are associated with a higher prevalence of violence, reinforcing the argument that violence is, at least in part, a development issue. The article is structured as follows. The next section presents some data on homicides, mainly to provide a benchmark for the follow-on sections. Police numbers presented in the discussion on homicide conviction rates suggest that low- and middle-income countries (LIMICs) have relatively small police forces when compared to their armies. The section thereafter provides some of the evidence of violence against women and suggests how this violence can be reduced. Violence against children is the

Table 1: Prevalence rates of interpersonal violence per 100,000 people (2010)

Region	*Homicide*	*Violence against women*	*Violence against children*
Europe & Central Asia	3.0	1,665	1,336
East Asia & Pacific	3.1	2,234	4,053
North America	3.4	653	760
South Asia	4.0	4,323	11,000
Middle East & North Africa	4.2	3,011	6,919
Sub-Saharan Africa	9.6	5,807	10,072
Latin America & Caribbean	19.7	3,390	1,233

Sources: Homicide: UNODC. Women (intimate partner violence): DHS, and comparable surveys. Children (parental violence): MICS, and comparable surveys. See text for details. I thank James Fearon for help with the data in this table and Figures 1 to 3.

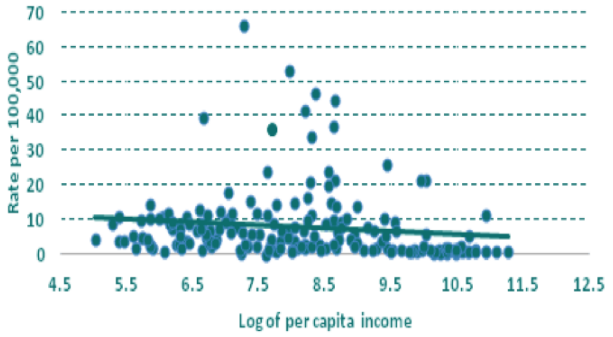

Figure 1: Homicide rates per 100,000 as against log of per capita income (2010). *Sources*: Income (GDP per capita), World Bank, *World Development Indicators*. Homicide: UNODC.

focus of the penultimate section, arguing that the development community has so far not understood this type of violence to be a critical issue for development. The last section offers some conclusions.

This article examines data on forms of interpersonal violence such as homicide, violence against women, and violence against children. The evidence suggests that although violence exists everywhere, low-income societies suffer from higher rates of prevalence of violence. This reinforces the argument that violence is, at least in part, a development issue and deserves to be studied just as much as war or other forms of collective violence. Only few countries experience wars, but all countries experience interpersonal violence.

Homicides

Although there is a clear understanding in the WDR 2017 that high levels of violent crime impose considerable costs on society and constrain economic growth, I want to stress a number of additional issues. The discussion of interpersonal violence starts with homicides, because the data quality is better than for other forms of interpersonal violence and this section provides a useful benchmark. Homicide data are generally seen as the most reliable and internationally comparable violent crime statistics because they are connected to a body. Other violent crimes, such as for example robbery, may not leave behind any physical evidence and many more of these crimes go unreported. Most countries report homicide counts to the UNODC. Indeed, in 2010 almost all countries (195) reported their homicide data. In order to compare these data across countries they are expressed in rates per 100,000 people in the population. For 2010, Figure 1 is a scatter plot of the logarithm of per capita income and the homicide rate. Homicide rates vary considerably across the world. For example, Jamaica had a homicide rate of nearly 60 per 100,000, Malawi of 36, the United States of about 5, and Norway just under 0.7. The WHO considers a rate of 10 or greater as epidemic, and 45 countries have such high homicide rates. Only a weak negative correlation between income and homicide exists, due to the large dispersion of homicide rates, in particular across middle income countries. Many of the countries with high homicide rates and middle incomes are in Latin America and the Caribbean. (Also see Table 1, column 1 which displays the average homicide rates by region.) In Latin America and the Caribbean interpersonal violence is ranked as the fifth-leading cause of death, and it is the top killer among boys and young men aged 15–29.[3]

The WDR 2017 provides a very useful overview of how homicide rates can be reduced. Some countries, e.g. Australia, Brazil, and the United States have significantly reduced homicide rates in the recent past. A first order condition is that states establish a monopoly on violence, but changes in norms of behavior are also important. Steven Pinker argues that the "rights revolutions" made aggression and violence less

Table 2: Police, armed forces, and judges per 100,000 (2010)

Country income level	*Police*	*Armed forces*	*Judges*
Low income	116	599	3
Lower middle income	204	586	8
Upper middle income	417	725	13
High income	418	720	17

Sources: Armed Forces: World Bank, *World Development Indicators*. Police and judges: UNODC. *Note*: For income cutoffs, see endnote 5.

acceptable over the past few decades. By this he broadly understands that the civil rights movement, the feminist movement, and the gay rights movement argued for peaceful change, spread the idea of equality, and lobbied for public policy changes. Two additional factors that decrease the levels of violence are, first, a change in demographics which resulted in the presence of proportionally fewer adolescents and young adults who are both, the main perpetrators and victims of (fatal) violence and, second, the increased use of security technology such as burglar alarms in cars and homes and CCTV cameras. Property crimes and violent crimes are linked and since much of property crime is opportunistic, these technologies act as a deterrence to such crime and therefore also to violent crime.[4]

To establish the monopoly on violence and guarantee personal security, all sizeable countries have a police force and an army. The role of the police is to deter violence and to provide security through the apprehension of criminals. If it is true that "more police and more police presence have been shown causally to lead to declines in crime" (WDR 2017, p. 117), then it is important to consider the quantity and quality of policing that countries should provide. Although the optimal size of a police force is not obvious, there is evidence that LIMICs may be undersupplying security as their police forces are relatively small. To make a comparison across countries, consider the average number of police, armed forces, and judges per 100,000 people. These data are supplied by the World Bank and the UNODC, but are unlikely to be defined in the same way across reporting countries. For example, the inclusion of paramilitary groups in some countries within the police force is clearly problematic. Keeping these issues in mind, Table 2 shows that, on average, low-income countries have a much lower state capacity, i.e., they have far fewer police officers, soldiers, and judges.[5] On average, low-income countries have 116 police officers per 100,000 people in the population and high-income countries have 418. Similarly for the armed forces, where there are 599 per 100,000 in low-income countries as compared to 720 in high-income countries. Moreover, low-income countries appear to be mainly concerned with military security as they maintain relatively large armies in comparison to their police forces. Their armies are only 17 percent smaller than those of high-income countries, but their police forces are 72 percent smaller. Thus, in the international comparison, low-income countries do appear to undersupply security through police.

There can only be a police deterrence effect when perpetrators are apprehended, tried, and sanctioned. Conviction rates are, therefore, important in the strategy of reducing homicides and these rates do not only depend on the numbers of police. Homicide conviction rates vary considerably across countries. According to a 2013 UNODC report, perpetrators were only convicted for 24 percent of all homicides committed in the Americas. These rates are higher for Asia (48 percent) and Europe (81 percent). There are a number of reasons why the level of impunity is so high in the Americas but the nature of the homicides is likely to be important. Securing convictions is easier when the suspects are intimate partners or family members, but much more difficult when the homicide was committed by members of organized crime. Societies with high levels of organized crime also are often corrupt, leading to a weakening of the state. Corruption payments not only inhibit current criminal investigation and conviction of suspects but they also decrease the capability of the criminal justice system in the longer term. Corruption attracts individuals more interested in receiving private rewards rather than serving the public. This adverse selection reduces the quality of public officials in the criminal justice system. In addition, civil servants in countries with very high levels of organized crime also suffer intimidation, threats, and violence, making them less likely to investigate all homicides. To illustrate the danger of taking public office, consider these figures from Mexico: 147 mayors, 49 former mayors, and 8 mayoral candidates are believed to have been killed by criminal organizations from 2005 through December 2016. One consequence of corruption and adverse selection is low trust in the police force. Survey evidence from Latin America shows that trust in the police is low and that ordinary citizens perceive police corruption as a major problem. On average 16 percent of the respondents said they trusted the police "not at all," and a remarkable 42 percent responded that "the police are involved in crime." Compare this to surveys for the U.S. and Canada, where the percentages saying that they trusted the police "not at all" were 6.9 and 5.2 percent respectively, while the question about police involvement in crime was not even asked.[6]

Figure 2: Rates of violence against women per 100,000 as against log of per capita income (2010). *Sources*: Income (GDP per capita), World Bank, *World Development Indicators*. Intimate partner violence: DHS and comparable surveys.

In a word, many governments are not providing effective, efficient, and accountable policing to serve and protect the population, and police numbers are comparatively low in LIMICs. To reduce homicides, a data-driven, evidence-based, and problem-oriented approach will help to apply scarce resources effectively. For example, in many cities more than half of all homicides occur in less than two percent of street addresses. Prevention strategies must include strategies to restrict access to weapons, in particular firearms, and the abuse of alcohol. More generally, homicide rates decline when states establish good governance, an effective rule of law, curb the corruption of state officials, gain control over private protection markets, and enhance state legitimacy through inclusive institutions.[7]

Violence against women

As is true for all violence, the immediate effect of violence against women is pain and suffering, of course, but it has many other, and far-reaching, consequences. Gender-based violence represses women's voices and restricts their agency. It prevents women from fulfilling their potential and, in the aggregate, this violence harms societal and economic development. Women's equality and empowerment are important goals for the World Bank. This is evidenced by a recent report on empowering women and girls. Likewise, the UN and the WHO have published a number of reports specifically on violence against women, highlighting violence as a violation of human rights, as a problem of discrimination, and as a public health issue.[8]

The WDR 2017 also specifically comments on gender-based violence, power, and norms and makes a persuasive case to change the prevailing patriarchal power structures in many cultures. However, it is striking that while the *Report* highlights harmful cultural practices, e.g., female genital mutilation (FGM), the maltreatment of women who do not bear male children, and sex-selective abortions, it does not comment on the "everyday violence" inflicted on women around the world. The main perpetrators of this violence are women's intimate partners, i.e., their husbands, partners, or boyfriends. This is a serious omission because about 30 percent of all women experience some form of intimate partner violence during their lifetime. The data on nonfatal intimate partner violence mainly are based on the domestic violence module in Demographic and Health Surveys (DHS). Examples of reported physical and sexual intimate partner violence include being slapped, pushed, shoved, punched, kicked, beaten, choked, burnt on purpose, threatened with a weapon, physically forced to have sexual intercourse, having sexual intercourse because of fear what a partner might do, and being forced to do something sexual that is perceived as humiliating or degrading. When it comes to fatal violence, intimate partners are the largest group of perpetrators: About 43 percent of all female homicide victims were killed by a current or former intimate partner.[9]

The link between economic development and intimate partner violence is illustrated in Figure 2 and in Table 1, column 2. As mentioned, the main data are based on the domestic violence module in Demographic and Health Surveys (DHS). In line with the discussion on homicide rates, annual prevalence is expressed as rate per 100,000 and the relationship with income is negative: Women in lower-income countries are at higher risk of intimate partner violence, especially in Sub-Saharan Africa.

How can this low level of personal security for women be improved? Programs aimed at economic empowerment, such as (un)conditional cash transfers and micro-finance programs so far provide mixed results. In some programs the levels of domestic violence rose while others were effective in reducing the number of child marriages and extending the years of schooling for girls.[10]

As the WDR 2017 points out, a notion about " collectively shared norms about women's subordinate role in society" often is employed to justify the use of violence against them so that it becomes an "acceptable" use of force. For example, DHS data for Sub-Saharan Africa shows that 55 percent of all women, and 37 percent of all men, state that husbands are justified in beating their wives in any of these five scenarios: going out without telling him, neglecting the children, arguing with him, refusing to have sexual intercourse with him, or burning the food. Another example is that rape within marriage is not explicitly criminalized in many countries. Thus, what is considered violence against women is a social construct and, correspondingly, national laws vary considerably. In 2015,

according to a survey by the World Bank, the majority of countries had laws on domestic violence and sexual harassment in employment, but a number of countries have neither laws against domestic violence nor sexual harassment: Afghanistan, Cameroon, Chad, the Republic of Congo, Djibouti, Equatorial Guinea, Gabon, Guinea, Haiti, Iran, Mali, Mauritania, Oman, Russia, South Sudan, Swaziland, and Uzbekistan.[11]

As a rule, legal protection from intimate partner violence is weaker in low-income than in high(er)-income countries and there are fewer law enforcement officers to ensure the application of the existing laws. Moreover, not only are the number of laws and police important: Even if countries have codified laws criminalizing partner violence, the reality may still be very different. Common law and traditional practices may carry more importance in everyday life and laws are simply not applied. For example, female genital mutilation is outlawed in 26 African countries but, according to UNICEF, making this practice illegal has had no impact on the number of girls being mutilated. Thus, when legal norms run counter to social norms, legislative reform only has a limited effect on changing attitudes and practices. The deeper, underlying question therefore is how social norms can be changed.[12]

There is some evidence that "infotainment" can help to raise awareness of intimate partner violence and influence norms for the better. For example, in 2016 a popular soap opera aired on BBC Radio 4. Run over several months, it was a detailed story regarding intimate partner violence and resulted in a 20 percent increase of phone calls to U.K. helplines. The soap opera "Soul City," in South Africa, resulted in a 41 percent increase in the use of a domestic violence hotline and an increase in people disagreeing that domestic violence was a private affair (a 20 percentage points increase). In Uganda the "SASA!" program (Kiswahili, meaning "Now!") included a campaign for the prevention of domestic violence. This halved levels of violence and significantly promoted the view that violence against a partner is unacceptable.[13]

Among the programs that target individuals, so-called "dating violence programs" appear particularly promising. Evidence from the DHS domestic violence modules suggest that intimate partner violence is higher among teenagers than other age groups. For example, in Haiti about 16 percent of women suffered physical or sexual partner violence during year prior to the survey but this prevalence rate was more than double for teenagers (15–19 years old). There is evidence that teaching safe and healthy relationships decreases the incidence of sexual assault, increases knowledge of intimate partner violence, and reduces physical and sexual partner violence among teenagers. Such programs have been evaluated in the U.S. and Canada, with studies suggesting a significant decrease in dating violence following from the programs. Interventions for these age groups are likely to have long-lasting effects because very often men and women experience behavior that they repeat later in life.[14]

Violence against children

In the WDR 2017, there is little mention of violence against children, suggesting that this is not a type of violence that is considered to be a concern for development. In contrast, this section argues why violence against children should be considered a critical issue for socioeconomic development. The emphasis here is on *socioeconomic*, because there already exists a large literature documenting that childhood exposure to violence not only causes immediate pain and suffering but carries life-long consequences for individual development. Violence disrupts social and psychological learning processes and adversely affects brain development. Longitudinal and cohort studies for the United States show that childhood violence increases the likelihood of criminal behavior, leads to higher rates of self-harm among women and criminal behavior among men in Denmark, as well as increased substance abuse in the U.S.[15]

The main perpetrators of violence against children are their parents and most of the detrimental effects are attributed to the decrease in parental attachment. Children who are hit by their parents feel less secure in their attachment at a young age and as adolescents. Children who feel less secure are more likely to internalize problems resulting in mental health problems and self-harm or they externalize them through aggression and violence.[16]

While this short discussion of the consequences can only provide a glimpse of this research, the evidence suggests that childhood violence has a considerable impact on children's wellbeing and their future personal development. Elsewhere I argue that childhood violence has considerable consequences for socioeconomic development because, in the aggregate, human capital and earnings potential will be lower, societies will see higher rates of antisocial behavior, more (violent) crime, higher prevalence of intimate partner violence, and future corporal punishment of children. Additionally, considerable health consequences arise due to higher rates of depression, anxiety, and higher rates of risky sexual behavior (STDs, unwanted pregnancies, abortions). Although the evidence largely is based on high-income countries, the emerging literature from LIMICs provides similar results.[17]

It is difficult to define what constitutes violence against children, and there is no globally accepted definition. Article 19 of the United Nations Convention on the Rights of the Child of 1989 obliges the signatories to take appropriate measures to protect children from all forms of physical violence while in the

care of parents or other caretakers. In contrast, the African Charter on the Rights and Welfare of the Child allows the administration of domestic discipline, but stipulating that "this must be applied with humanity and be consistent with the inherent dignity of the child" (Article 20, 1c). Thus, in an African context there seems to be no fundamental contradiction between a child's dignity and physical punishment. It has been argued that UN conventions are based on Western values and do not reflect the beliefs and practices in the Global South. In addition to the diverging views on what constitutes acceptable harm, cultural notions of childhood are diverse. The childhood studies literature argues that the understanding of childhood is shaped by age, gender, ethnicity, history, and location. This is in contrast to the UN convention where children are defined as any person under 18 years and are given universal rights.[18]

Without a global definition of violence against children and without comparable statistics, such as victimization surveys as in the case of intimate partner violence, data are difficult to raise. Many of the child victims would be too young, anyway, to be included in a survey. Many countries, especially those with low incomes, do not keep records on child abuse and neglect because child protection services are unavailable or the legal systems are dysfunctional. But even in countries with good child protection services, child abuse is massively underreported. In many cases, the victims never report the abuse. This may be for a number of reasons, for example because they are too young to report the violence or because they have a limited understanding of what constitutes abuse and neglect, they feel ashamed, and they think nobody will believe them. Many perpetrators are able to use their power to intimidate their victims into keeping silent about the abuse, or alternative care situations are difficult or impossible to arrange, and children thus feel they have to put up with their violent environment. So, even if states collect official statistics they will be unreliable due to low disclosure rates.[19]

In the absence of a global definition and readily available data, I follow literature precedent and employ data on the use of physical punishment by parents as a proxy of violence against children. The expressions "corporal punishment" and "physical punishment" are used interchangeably. The UN's Multiple Indicator Cluster Surveys (MICS) provide data on parental discipline techniques and have been used in a number of reports, and in research. In these MICS surveys, primary care givers (mainly mothers) were asked about child disciplinary practices at home, including:[20]

- Nonviolent discipline (e.g., gave him/her something else to do, explaining why behavior was wrong, taking away privileges);
- Psychological aggression (e.g., shouted at him/her, called him/her dumb or lazy);
- Physical punishment (e.g., shook him/her, spanked, hit with bare hand on the bottom or other parts of the body, hit with a belt, stick, or other hard object on the bottom/other parts of the body); and/or
- Severe physical punishment (e.g., hit or slapped him/her on the face, head or ears, beat him/her with an implement repeatedly).

Using the responses to construct a proxy of violence against children requires some judgement. While some argue that any corporal punishment constitutes child abuse, this is in contrast to prevailing norms where many parents do not consider slapping or spanking their children as abusive. The medical and public health literatures do not put forward a definition of what constitutes violence against children. Expressions such as "child maltreatment," "abuse," and "adverse childhood experiences" are used but no universally accepted definition of these categories exists. Based on the assumption that the consequences are likely to be greater if the violence is more severe, I restrict the discussion to severe physical punishment, the last category in the four point list above. Psychological aggression, although damaging to children, is also excluded because it is difficult to find a common definition and because it is difficult to compare to physical aggression. Severe physical punishment, such as repeated beating with a belt or cane, is more likely to be recognized across the world as abusive toward children. This is important, because even in societies where some form of corporal punishment is the norm, there are limiting parameters that distinguish acceptable from unacceptable forms of adult physical aggression toward children. There is also a close link between physical punishment and more severe child abuse: Often such abuse started with physically punishing the child.[21]

Using the MICS data, a rate of severe child punishment per 100,000 was calculated. Figure 3 shows care-givers in low-income countries reporting higher rates of severe punishment when compared to those in high-income countries. The size of any reporting bias is unclear. In societies where child physical punishment is the norm, parents may even overstate the use of harsh discipline methods, while parents in other societies may be reluctant to report the true extent of their use of such punishment. Thus, the gradient of the regression line in Figure 3 may be flatter than indicated there. Table 1, column 3 also suggests that low-income regions have higher rates of severe child punishment.

What do the laws against corporal punishment tell us about the importance governments attach to the problem of violence

Figure 3: Rates of violence against children per 100,000 as against log of per capita income (2010). *Sources*: Income (GDP per capita), World Bank, *World Development Indicators*. Parental violence: MICS and comparable surveys.

against children? Currently just 55 states prohibit corporal punishment in all settings, including the home, and 130 states have outlawed corporal punishment in schools. However, detailed evidence from the Young Lives Project suggests that even in states where teachers are not allowed to use corporal punishment, many school children still report being physically disciplined.[22]

If laws do not necessarily change behavior, what other options are there? One promising intervention are parenting programs. Originating in social learning theory, they focus on teaching parenting skills and knowledge about raising children. The emphasis lies on establishing a strong child-parent bond through praise and nonviolent discipline methods. Referred to as "positive parenting," a number of different programs exist, for example, the Incredible Years Parent Training (IYPT), Positive Parenting Program (Triple P), and Parenting for Lifelong Health (a WHO and UNICEF initiative). Although originally designed in high-income countries, this type of intervention has been carried out many countries. Parenting programs have been subjected to rigorous evaluations and the evidence suggests that they can substantially reduce the maltreatment of children. Although only a small number of parenting programs have been applied in low- and middle-income countries, the evidence is encouraging. Even when programs are transported to countries different from where they originated, parenting programs appear to be at least as effective. This is supported by recent evidence from Liberia, Uganda, and Kenya. There is also some emerging evidence that early childhood development programs (e.g., pre-school programs) have the potential to reduce violence over the long term in Latin America. For these interventions context matters but a recent review suggests that important lessons can be drawn from high-income countries.[23]

Conclusion

The main concern in the WDR 2017 lies with organized armed conflict. In contrast, the aim of this article is to put a spotlight on interpersonal violence. Only few countries experience (civil) war or other collective violence but all countries experience interpersonal violence. The discussion centers on the prevalence of three types of violence: homicide, intimate partner violence, and violence against children. Violence can only be measured imprecisely but all of the available cross-country evidence suggests that violence is most prevalent in low-income countries. Large dispersions in the data suggest that cultural differences matter. Here, culture is understood as a society's shared beliefs and norms that guide their members' actions. Internalized social norms influence individual attitudes and the ways in which people behave. Norms that support violence can be used to justify violent behavior and practices and can therefore play a key role both in the perpetration of violent behavior at individual and community levels and in shaping the responses of both victims and institutions. Today, violence against women receives much more attention in the development research and policy community than in the past, in part because gender-based violence is understood as discrimination, a human rights violation, a public health issue, and as a development problem. It is less clear how societal gender norms can be changed, but new legislative initiatives and information campaigns suggest that we are witnessing a global transformation. Specific interventions, such as educational programs aimed at teenagers, can significantly reduce intimate partner violence. In contrast, violence against children is not commonly perceived as a development problem. Yet a large body of research provides evidence that this form of violence not only inflicts immediate pain, suffering, and harm on the child but carries severe adverse effects on the physical and mental development of individuals. Victims are less likely to fulfill their inherent potential and, in the aggregate, this may have negative consequences on socioeconomic development. (This is conjecture at the moment and more research is needed to provide evidence to support this claim.) Most violence against children is committed by their parents. Parenting interventions have shown how to effectively reduce harsh parenting practices, suggesting that this type of violence can be reduced.[24]

External aid for "legal and judicial development," including initiatives to improve policing and programs to change violence-related norms, is currently very small; the total amount of overseas aid targeted at the prevention and treatment of interpersonal violence has been put at less than one half of one

percent. Given the large problems caused by interpersonal violence with regard to human rights violations, public health, and economic development, the international aid community should give more priority to the prevention of interpersonal violence. As the discussion suggested, violence is not something we have to bear without recourse to help. We now have at hand plenty of evidence-based policy suggestions that could be put into practice.[25]

Notes

I thank Jurgen Brauer and two anonymous referees for helpful comments and suggestions. All remaining errors are my own.

1. Supported research on security: See, e.g., Collier, *et al*. (2003). Little aid to security-related issues: Fearon and Hoeffler (2014).

2. Advocacy groups: http://www.genevadeclaration.org/ and http://www.smallarmssurvey.org/ [accessed 28 February 2018]. 624,000 people: Data by Mc Evoy and Hideg (2017, p. 21) for the same year (2015) suggest that 76 percent of violent deaths were due to interpersonal violence. Work by the Geneva Declaration Secretariat (2017, p. 51) suggests an even higher percentage of about 86, but their figures are based on averages for the years 2001–2012. However, it is important to point out that people do not only die due to violence in organized armed conflicts (direct deaths); they also die due to malnutrition and disease (indirect deaths). These indirect deaths are estimated to be considerably higher than the direct deaths (Muggah, 2015). Recent estimate: Hoeffler (2017a).

3. WHO: See the WHO's Global Health Estimates at http://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html [accessed 19 October 2017]. The data quality of the UNODC and WHO data are discussed in Andersson and Kazemian (2017) and in Kanis, *et al*. (2017).

4. Useful overview: Spotlight 5: Crime (WDR, 2017, pp. 133–135). Rights revolution: Pinker (2011). Change in demographics: Baumer and Wolff (2014) refer to this as improved "youth oversight." Opportunistic: Gash (2016).

5. The World Bank defines low-income economies as those with a gross national income, or GNI, per capita of USD1,005 or less in 2016 and high-income economies are those with a GNI per capita of USD12,236 or more. The full definition of income classification and country lists can be found at https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups [accessed 8 March 2018].

6. Danger of taking public office: See Heinle, Molzahn, and Shirk (2017). Surveys in the U.S. and Canada: These numbers are based on *Latinobarometer*. Evidence from the *Afrobarometer* is similar. See discussion in Fearon and Hoeffler (2014).

7. More than half: Muggah and de Carvalho (2016). Prevention strategies: See, e.g., WHO (2010). More generally: Eisner (2015).

8. Recent report: World Bank (2014). UN and WHO: See, e.g., UN (2015), WHO (2013).

9. Specifically comments: WDR (2017, p. 114). 30 percent of women: Devries, *et al*. (2013). Perpetrators: Stöckl, *et al*., (2013).

10. Mixed results: World Bank (2014, chapter 3).

11. WDR quote: WDR 2017, p. 114. DHS data: Cools and Kotsadam (2017). A number of countries: The evidence is based on a World Bank (2015) report, using evidence from 173 countries. Liberia only recently introduced a law on domestic violence through outgoing president's Ellen Johnson Sirleaf executive order in January 2018. The UN (2011) report provides further discussion on the rights of women.

12. Attitudes and practices: UNICEF (2013). See also Platteau and Wahhaj (2014) for a detailed discussion on the interaction between traditional customs and modern statutory law.

13. South Africa and Uganda: Information taken from the World Bank (2014, chapter 3).

14. Haiti, 16 percent of women: Gage, Hoeffler, and Honoré (2017). Decreases: Sinclair, *et al*. (2013). Increases: Gage, Honoré, and Deleon (2016). Reduces: Foshee, *et al*. (2004); Lundgren and Amin (2015); Peskin, *et al*. (2014); Taylor, *et al*. (2013); Wolfe, *et al*. (2009).

15. Large literature: See, e.g., Gilbert, *et al*. (2009), Norman *et al*. (2012), Sara and Lappin (2017). Disrupts learning: See, e.g., Straus, Douglas, and Medeiros (2014). Brain development: See, e.g., Danese and Baldwin (2017), Nemeroff (2004, 2016). Likelihood of criminal behavior: Straus, Sugarman, and Giles-Sims (1997). Denmark: Webb, *et al*. (2017). Increased substance abuse: Scheidell, *et al*. (2017).

16. Main perpetrators: Pinheiro (2006). At young age: Coyl, Roggman, and Newland (2002). As adolescents: Palmer and Hollin (2001).

17. Elsewhere: Hoeffler (2017b). Emerging literature: See Know Violence in Childhood (2017), Shiva Kumar, *et al*. (2017), and the other articles in the special issue in vol. 22 of *Psychology, Health and Medicine* (2017).

18. It has been argued: Renteln (2013). Cultural notions of childhood: See discussion in Jenks (2005), Scheper-Hughes and Sargent (1998). Childhood studies literature: Qvortrup, *et al*. (2009).

19. Dysfunctional: Marcus (2014).

20. Precedent: Fearon and Hoeffler (2014) and Pereznieto, *et al*. (2014). Proxy of violence: Know Violence in Childhood (2017) understands violence against children much more broadly. They include, e.g., any form of parental violence as well as violence in school from teachers and peers. Child disciplinary practices: The Parent-Child Conflict Tactics Scale was developed by Straus, *et al*. (1998). Reports and in research: See, e.g.,

UNICEF (2010, 2014), Akmatov (2011).

21. Some argue: Freeman and Saunders (2014). In contrast to prevailing norms: Straus, Douglas, and Medeiros (2014). Close link: Whipple and Richey (1997).

22. 55 states: See http://www.endcorporalpunishment.org/, [accessed 3 October 2017]. Detailed evidence: See Guerrero and Rojas (2016), Morrow and Singh (2016), Pankhurst, Negussie, and Mulugeta (2016), Vu (2016).

23. Social learning theory: Bandura (1977). Rigorous evaluations: See, e.g., Barlow, *et al*. (2006), Piquero, *et al*. (2016), Prinz, *et al*. (2009). Transported to different countries: Knerr, Gardner, and Cluver (2013). Recent evidence: See the Special Section in the *European Journal of Development Research*, Vol. 29, No. 5, on Violence Against Children and, in particular, Guisto, *et al*. (2017), van Esch and de Haan (2017), and Siu, *et al*. (2017). Recent review: Chioda (2017).

24. Norms that support violence: UNICEF (2013, p. 146).

25. Less than one half of one percent: Fearon and Hoeffler (2014).

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The European origins of the Israeli–Palestinian economic union: A genealogical approach

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Abstract

The Oslo peace process established a modified economic union between Israel and the Palestinian Authority. Economic unions require extensive collaboration and are generally found between states that enjoy pacific relations and are looking to deepen integration and political ties. The choice of an economic union between these adversaries is puzzling given that the aim of the peace process was to disentangle Israelis and Palestinians by establishing two separate states. Today, after the optimism surrounding the process has faded, it is easy to see the arrangement as a perpetuation of Israeli control over Palestinian life. However, such assessments fail to consider, first, the depth of the negotiations; second, the significant differences between the outcome of the negotiations and what was previously imposed by Israel; and, third, the gap between what was negotiated and what was later implemented. This article traces the genealogy of the economic union by exploring all three factors. While the negotiators did not start with a *tabula rasa*, they attempted to alter the existing economic arrangement along the European neo-functionalist model of integration. This approach was later largely abandoned, and what followed bore little resemblance to the positive spillover effects in Europe.

Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slave of some defunct economist. Madmen in authority who hear voices in the air are distilling their frenzy from some academic scribbler of years back.

—John Maynard Keynes, *The General Theory of Employment, Interest and Money*

An often overlooked feature of the Oslo peace process is that it established a modified economic union between Israel and the newly established PLO-run Palestinian Authority. Economic unions require extensive collaboration and typically are established to increase economic efficiency. They are generally created by states that enjoy pacific relations and are looking to deepen integration and entrench their political ties. The choice of an economic union to govern economic relations between longstanding adversaries is therefore puzzling given that the *prima facie* aim of the peace process was to disentangle Israelis and Palestinians by setting them on the road to establishing separate states. Yet integration during the interim period drew the parties closer together.

Numerous studies have discussed the economic framework of the Oslo peace process subsequent to its breakdown, but few studies have systematically explored why an economic union was picked over other available options in the first place. The optimism surrounding the peace process has long since faded, and today it is easy to see this arrangement as a perpetuation of Israeli control over daily Palestinian life, contrary to the spirit if not the letter of the agreements. Indeed, several authors have come to the conclusion that the economic arrangement was little more than an extension of conditions that Israel imposed after occupying Palestinian territories in 1967. However, such post-hoc assessments generally fail to seriously consider, first, the intense and far-ranging negotiations that led to the economic protocol, second, the significant differences between the economic arrangement captured in the protocol and the economic arrangement unilaterally imposed on the Palestinian territories by Israel post-1967, and third, the substantial gap between what was negotiated and what was ultimately implemented on the ground. I propose to fill these gaps.[1]

This article traces the evolution of the Israeli-Palestinian economic relationship from the start of the Oslo peace process to the present by exploring all three factors. In so doing, I employ a genealogical sensibility. Broadly, a genealogical approach focuses on the power of discourse over received knowledge. It is a historical method that explores how discourse gives rise to currently accepted truths. It looks to the past to uncover how the present view of history is shaped by the power of ideas; it is a "history of the present," as it were. A genealogical approach allows one to reevaluate assumptions that give rise to contested meanings of the present. It is, in this

sense, a method of counter-history.[2]

The negotiators did not start with a *tabula rasa*. I argue that they attempted to alter the existing economic arrangement by deepening Israeli–Palestinian integration along the lines of a European neo-functionalist model that would provide Palestinians with greater economic autonomy through the ability to independently raise revenue, pursue local economic development, and trade with neighboring Arab states with whom Israel enjoyed no economic relations. This was to be a substantial departure from the economic arrangements imposed by Israel post-1967. The explicit hope was that increased economic integration would create positive spillover effects, much as had been seen in Europe in the post-war era. As such, the Oslo peace process is a diagnostic case of the diffusion of ideas—from Europe to the Middle East—in international relations. I also argue that there was great slippage between what was negotiated and what was implemented. Although never officially repudiated, many aspects of the newly minted protocol were abandoned following a wave of suicide bombings aimed at Israeli civilians and the subsequent election of a right-wing, Likud government headed by Benjamin Netanyahu in 1996. What followed bore little resemblance to the neo-functionalist model. Indeed, the Palestinian economy remains weakened and subordinate to Israeli control.[3]

I rely on three main sources of evidence. First are the peace accords, all of which are publicly available. Second, I make use of semi-structured interviews I conducted with key informants, including substantially all of the Palestinian and Israeli negotiators of the Oslo peace process and their Norwegian mediator. Third, to supplement the interviews I rely on a small number of political memoirs that provide first-hand accounts of the negotiations. Because actors are said to have powerful incentives to withhold or misrepresent private information, I treat these sources with caution, triangulating evidence where possible to increase confidence in my findings.[4]

The Israeli–Palestinian peace process has been studied extensively, yet the role of the European approach to integration is not well-covered. As compared to the United States, there is a tendency to see Europe as having had a negligible impact during the Oslo peace process, particularly in its nascent stages. In contrast, I show in this article that Europe has had a significant effect on the character of the negotiations, namely in the context of the economic union between Israel and the Palestinian Authority (PA). Addressing this impact in detail will help shed light not only on the Israeli–Palestinian peace process but also on economic integration, international cooperation, treaty-making, and peacemaking in general.[5]

Economic unions require extensive collaboration. Typically, they are created by states that enjoy pacific relations and are looking to deepen integration and entrench political ties. The choice of an economic union to govern economic relations between longstanding adversaries is therefore puzzling given that the *prima facie* aim of the Oslo peace process was to disentangle Israelis and Palestinians by setting them on the road to establishing separate states. This article traces the evolution of the idea of an economic union—from conception to negotiation and implementation—between Israel and the Palestinian Territories.

The Paris Protocol

In 1993, Israel and the Palestinian Liberation Organization (PLO) signed the first of a series of interim agreements, known as the Oslo Accord. The *Accords* put an end to the *intifada*, as well as to the local movement to boycott Israeli goods and evade taxes that accompanied it, and committed the parties to negotiating the peaceful resolution of their conflict within five years' time. The PLO and Israel recognized each other as legitimate partners for the first time, and the PLO agreed to renounce violence and terror. Over the next decade, substantially all Palestinian population centers in the West Bank and the Gaza Strip were turned over to a Palestinian Authority, with Yasser Arafat at its head.[6]

The Paris Protocol, signed in April 1994 as part of the *Accords*, set out to modify the economic relations between Israel and the PA. *Paris* marked a significant departure from the economic arrangements unilaterally imposed by Israel on the Palestinian territories. In the wake of the 1967 war, Israel introduced the shekel as a common currency, gradually linked Palestinian infrastructure to its own (severing it from Jordan and Egypt), permitted Palestinian labor mobility, and established a *de facto* customs union. At the same time, it introduced protectionist measures favoring its own economy and adopting restrictions on the Palestinian economy which suppressed local economic development. In particular, Israel denied the Palestinians the ability to stimulate their local economy, routinely denied permits to establish factories that would compete with Israeli producers, prevented the production and sale of agricultural products that would compete with Israeli producers, and underinvested in local infrastructure.[7]

Paris specified almost every form of nonsecurity interaction between the parties, including water, electricity, energy, transport, communications, industry, and social welfare. It established a fund to support Palestinian economic development, with billions of dollars pledged by international donors, and created joint industrial zones near Palestinian population centers, in effect moving higher paid Israeli jobs

closer to Palestinian workers.[8]

The bulk of the protocol, however, was concerned with trade, monetary and fiscal policy, and labor relations. First, *Paris* promised free labor movement for Palestinians to Israel, where workers earned 91 percent more. Although Palestinian laborers were permitted employment in Israel post-1967, Israel had begun to restrict their movement during the first *intifada*. Enshrining free mobility in the *Accords*, therefore represented a significant change in the labor regime. Second, the trade relationship was modified under *Paris* guaranteeing both sides free and preferential access to each other's markets. As well, the PA was given the ability to pursue independent trade arrangements with those states with which Israel did not enjoy diplomatic or economic relations. International trade was to be facilitated by the construction of a harbor and airport in Gaza and by a corridor linking Gaza to the West Bank. While the rules governing imports to the PA, including tariffs, were to be harmonized to the prevailing Israeli customs regime, a degree of autonomy over trade was to be granted to the PA in recognition of their special relationship with Arab and Muslim countries. Third, the PA was given authority to collect taxes, which previously accrued to Israeli authorities. Taxes and tariffs on goods imported through Israeli ports destined for the PA were to be collected by Israel and transferred to the PA, minus a three percent service charge. Similarly, payroll taxes and social security benefits collected in Israel on Palestinian employees were to be remitted to the PA. Furthermore, a Palestinian Monetary Authority (PMA) was to be established to oversee the Palestinian banking system and manage the PA's foreign currency reserves, although its ability to pursue an independent monetary policy was limited by the continued use of the Israeli shekel, and a full-throated fiscal policy would be constrained by the harmonization of tariffs and value-added taxes within a narrow range of the prevailing Israeli rates.[9]

Paris made extensive use of the preexisting economic arrangements (e.g., the maintenance of the customs union and the shekel as a common currency), but important differences were written into the agreement as well. Indeed, the customs union was modified extensively, providing Palestinians both, greater autonomy (through the ability to independently raise revenue, pursue local economic development, and trade with neighboring Arab states) and deeper economic integration with Israel. Unlike the customs union Israel unilaterally imposed post-1967, the Paris Protocol was the product of negotiations. With its promise of the free flow of goods, capital, and labor, and a common currency, *Paris* could properly be considered as a loose or modified economic and monetary union, one step shy of complete economic integration.[10]

Discussion

The Oslo negotiations, an unofficial exercise, departed dramatically from the official talks taking place simultaneously in Washington, D.C. First, the Oslo meetings were held in secret. This insulated the negotiators and allowed them considerable latitude. Second, unlike the official talks, from which the PLO was excluded, Oslo included the PLO. And third, they were initiated under a recently elected pro-peace Israeli Labor government, rather than by the United States and foisted on an unwilling Likud party, as the Washington talks had been. Finally, and perhaps most importantly, the Israeli side in Oslo consisted initially of academics based at the EU-funded Economic Cooperation Foundation (ECF) who reported to a Deputy Minister, Yossi Beilin, and to the Minister of Foreign Affairs, Shimon Peres, and all of whom—unlike the Israeli representatives in Washington—shared a deep-seated faith in the pacific effects of economic integration.

In devising the future Israeli–Palestinian economic relationship, the Oslo negotiators could choose from a range of possible alternatives, from complete economic separation to full integration. The Palestinian team desired increased autonomy from Israel on all matters, including the economy. For their part, the Israeli team favored economic integration in the form of a modified economic union which they saw as the most likely arrangement to confer mutual gains on the parties, thereby serving the goal of building confidence. Put differently, the Israelis believed that raising the Palestinian standard of living would reduce future violence by giving them "something to lose." Israeli negotiator Uri Savir explains that "fundamentalism ... thrives on poverty and despair." A modified economic union was a departure not only from the preexisting economic arrangements but also from the official talks where economic integration failed to emerge as an important negotiating plank. Indeed, economic issues rarely came up in Washington. Where they did, they tended to be lumped together with the issue of political independence by the Palestinian team, which Israel largely rejected.[11]

Extant theories of economic integration hold that deepening economic ties between countries yields both political and economic benefits. Integration is said to be mutually beneficial. On the economic side, neo-liberals argue that based on comparative advantage and economies of scale deeper integration through trade liberalization should bring with it higher productivity. On the political side, neo-functionalist theories suggest that economic and technical integration creates positive spillover effects that breed strong incentives for political integration. Neo-functionalism is based on Jean Monnet's approach of linking individual economic sectors across Europe (e.g., coal and steel) in the 1950s. The economic

interdependence resulting from these linkages necessitated the creation of supra-national institutional capacity (i.e., legal regimes and dispute resolution mechanisms). In other words, political cooperation in Europe was a byproduct of initial technical and economic integration. Economic interdependence has therefore become synonymous with pacific behavior between states.[12]

This was the vision to which the Israeli negotiators in Oslo subscribed. From their standpoint, economic cooperation would benefit both parties through increased productivity, trade, and employment. Israel would continue to have preferential access to the Palestinian market and generally reap the dividends of peace. The Palestinians would gain access to highly competitive foreign markets through Israel's free trade partners, as well as preferential access to the Israeli market. Greater integration was also supposed to provide Palestinians with technological, administrative, managerial, and organizational spillovers from the Israeli economy. Furthermore, the arrangement would give the Palestinians much needed time to develop the institutions and infrastructure necessary to manage their economy. According to David Brodet, the former Director General of the Israeli Ministry of Finance and an Oslo negotiator, "these were the issues that at that time both sides saw as win-win." Indeed, the agreement was remarkably optimistic and did not contain contingencies for deteriorating relations between the parties.[13]

The Israeli team's faith in the neo-functionalist approach was influenced by the European experience. They believed that economic integration would lead to positive spillover effects, thus reinforcing a fledgling peace, much as it had in postwar Europe. Indeed, the main intellectual figures behind the Oslo peace process made repeated and explicit references to it. For example, in his book *The New Middle East*, Israel's then-Foreign Minister Shimon Peres describes a future in which Israelis and Arabs link their economies: "The very existence of this common market will foster vital interests in maintaining the peace over the long term." Israeli negotiator Ron Pundak expands: "European style economic integration—the New Middle East, as Peres called it—will reduce conflict."[14]

Similarly, the Israeli negotiator Yair Hirschfeld describes their efforts in Oslo to create positive spillover effects patterned after the European experience. Following neo-functionalist logic, he explained that spillovers were meant to occur initially through technical and economic integration, gradually leading the parties to overcome their entrenched partisan narratives and embrace the process in advance of final status talks. While *Paris* was merely an interim arrangement, the negotiators intended for it to form the basis of an ongoing cooperative relationship between the parties. Hirschfeld explains:

> The picture you have from Europe was three phases. First was after World War Two. The leadership understood that they had to develop joint interests, mainly between Germany and France. The second stage was normalization. Societies slowly went along with it. The third phase was to look at the narratives.[15]

Not only did the EU provide a successful model of peaceful integration to be emulated, it had also been promoting its model of integration abroad for some time. The EU played host to a series of high-level talks of the Regional Economic Development Working Group (REDWG) coextensive with the talks then taking place in Washington. There, the Europeans quietly offered a competing, and in some ways novel, approach to conflict resolution. Unlike the Washington talks, which had begun to stalemate over the sticky issues of PLO involvement, refugees, borders, and others, these talks largely avoided issues of high politics. REDWG instead focused on joint technical and economic matters, such as the free flow of people, goods, services, and capital within the region, the development of infrastructure, the promotion of the private sector, investment, and others. Peters writes that the EU was informed by:

> functionalist, liberalist conception of international cooperation and peace, according to which the enmeshing of the states in the region in an ever-widening web of economic, technical and welfare inter-dependencies would force them to set aside their political and/or ideological rivalries. The process of ongoing cooperation in areas of mutual concern would blur old animosities and create a new perception of shared needs. This interaction would be accompanied by a learning process which would foster a fundamental change in attitude and lead to a convergence of expectations and the institutionalization of norms and behavior ... functional cooperation would eventually spill over into regional peace.[16]

Furthermore, the EU hosted track-two diplomatic efforts and funded think tanks (such as the ECF) and development projects. It would later formalize these efforts through the office of the Special Representative.[17]

The Israeli team's adoption of the neo-functionalist model of integration has all of the hallmarks of a process of "diffusion". Diffusion occurs when ideas are disseminated from one actor to another. At the most basic level there needs to be contact for ideas to diffuse. Contact exposes an actor to a new or novel idea. This is often referred to as the "epidemic"

or "epidemiological" model of diffusion. In this case, there was plenty of contact between the parties: The partnership between Israel and Europe (the EEC) date to 1964. The two reached a free trade agreement in 1975, and, during the period in question, the ECF, REDWG, and others further exposed the Israeli team to the European model of integration.[18]

Yet, while contact may be a necessary condition for the diffusion of ideas, on its own it is likely to be insufficient. Just because actors come into contact with new ideas does not mean that they will adopt them. Persuasion or social learning (socialization) are therefore often added to the epidemiological model of diffusion. Persuasion is the process by which communication leads to a change in beliefs. Persuasion occurs through deliberative argument rather than through material incentives (or disincentives) and is most likely to happen in less politicized and more insulated environments, and where both parties are from the same professional (epistemic) background, or where the source of ideas is from an in-group to which the other side wishes to belong. Again, the EU-funded ECF and REDWG both qualify as good sites of quiet deliberation, particularly for the newly elected Israeli Labor government which was keen to build closer relations with Western Europe.[19]

Finally, diffusion is said to be most likely to occur, and occur most rapidly, when the target is at a critical juncture and there appears to be a "goodness of fit". Policy failures, crises, or general uncertainty all motivate the search for new ideas, particularly from actors with a "recognized and authoritative claim to knowledge." These ideas are more likely to be adopted when "the target has few prior, ingrained beliefs that are inconsistent with the socialization agency's message," that is, when there is a similarity or a convergence, particularly in legal and bureaucratic areas. And indeed, the breakthrough in Oslo came about after one such critical juncture, the first *intifada* and the failure of the Washington talks. Furthermore, Israel was primed for a European model, having liberalized its economy over the past decade. And although *Paris* was not merely an extension of the economic conditions that Israel imposed after occupying Palestinian territories in 1967, it is worth noting again that the negotiators did not start with a *tabula rasa*. As I have argued, *Paris* modified and expanded upon the existing trade and monetary arrangements. In these ways, *Paris* converged with prevailing legal and bureaucratic spheres.[20]

Substantially all of the modifications to the economic union were at the insistence of the PLO team. On the one hand, Palestinian negotiators placed substantial emphasis on maintaining or improving access to Israeli markets and on increasing their own level of economic development. On the other hand, they spent considerable energy to win increased economic independence, counter to an Israeli desire for deeper economic cooperation. In particular, the PLO team unsuccessfully demanded an independent currency rather than a monetary union, and a free trade agreement rather than a customs union, trappings of which they received via the trade rules described above.[21]

The diffusion model is informative in explaining why the idea of economic integration had less purchase on the Palestinian negotiators. First, they had significantly less contact with their European counterparts. Coming from an armed movement, well-entrenched in the Soviet camp, they were historically part of a substantially different epistemic background than the Europeans. As a result, there were far fewer sites for contact and social learning between them. Second, and more importantly, the notion of economic integration was strongly discordant with the PLO's long-professed desire for sovereignty. David Brodet explains: "[A] free trade agreement or separate responsibilities for trade issues, automatically creates recognition of economic borders and economic borders lead to political borders."[22]

From negotiation to implementation

While the process did trigger an huge influx of foreign aid to the fledgling PA and ushered in a period of sustained modernization and liberalization of the Palestinian economy, the later rejection by Israel of numerous aspects of the protocol largely negated any of the promised economic gains. After a period of rapid implementation beginning in 1994, which included the construction of industrial zones, the remittances of taxes and tariffs by Israel to the PA, the opening of crossings, and other integral elements of *Paris*, Israel halted further redeployments from Palestinian territories and began imposing closures on the Palestinian territories. In 1997, Israel also began periodically withholding tariff and tax revenues collected on behalf of the PA at Israeli ports of clearance, paying them late or not at all. These reversals were a result of several factors, including the wave of deadly suicide attacks aimed largely at Israeli civilians, the assassination of Israeli prime minister Yitzhak Rabin, under whose leadership the process was initiated, and the electoral defeat of the Labor party by the right-wing Likud party led by Benjamin Netanyahu, who repudiated the peace process. "The Oslo spirit ... was brushed aside," Pundak concludes.[23]

Foremost, wholesale border closures largely invalidated those portions of the agreement that granted free and preferential access to each others' markets, labor mobility, and trade between the PA and neighboring Arab states. Israel first began implementing periodic closures on the Palestinian

territories in 1993, restricting the movement of goods and people. However, closures became a regular feature of Palestinian life only in the mid-nineties. Closures made Palestinian labor far less reliable for Israeli employers. Then-PA Minister of Finance Salam Fayyad noted: "Although there are many countries around the world with similarly high or even higher rates of unemployment, I know of none where the rate of unemployment can go up by 10–20 percentage points overnight." This instability caused Israeli employers to seek laborers elsewhere; immigration policies were changed to grant easier access to foreign rather than to Palestinian workers. The impact on the Palestinian economy was drastic: In 1992, more than a third of the Palestinian workforce was employed in Israel, contributing about 25 percent of GNP; in 1996, only 7 percent were similarly employed, contributing no more than 6 percent.[24]

Trade also slowed considerably as a result of border closures and the failure to build international ports as promised in *Paris*. Because there was no direct access to third countries by air, land, or sea, closures often meant that exports could not find their way out of the Palestinian territories. However, even when closures were relaxed, complex and expensive export procedures—typically justified on grounds of security—were imposed in order to move Palestinian goods abroad through Israeli ports. For example, Palestinian-registered vehicles required special permits which often took several weeks to acquire and required lengthy inspection, and cargo originating in the Palestinian territories was not permitted carriage on passenger planes. Later, Palestinian vehicles were altogether excluded from entering Israel and costly back-to-back shipping measures were devised; the Gaza-West Bank corridor never materialized. Palestinian export costs are approximately 30 percent higher than they are for Israeli companies, and take 20 to 80 percent longer to reach their destination. As a result, from the start of the peace process onward, Palestinian exports declined nearly 50 percent by 1995.[25]

The complexity of *Paris* also led to numerous disputes and unanticipated economic inefficiencies. For example, the leakages in tax and tariff collection as a result of Paris have been estimated to be as high as USD380 million per year, far outweighing the approximately USD48 million a year in savings by not setting up an independent customs authority. Similarly, the system devised to enable autonomous trade between the PA and Arab countries proved so difficult to implement that annual trade amounted to a paltry USD35 million, or just 1.1 percent of the total value of imported goods. And, while *Paris* specifically banned the use of standards as nontariff barriers (NTBs), contrary to the spirit of the agreements, Israel has been accused of using veterinary and phytosanitary standards to protect its domestic industries at the expense of the Palestinian economy. Aside from their potential to be used as NTBs, the Palestinians also complained that the imposition of Israeli standards constrained the development of their economy. Furthermore, Israel maintained extensive subsidies, particularly to its agricultural sector, during the peace process, diminishing the competitive advantage the much poorer Palestinian economy had. And, the absence of an independent currency deprived the Palestinian Monetary Authority (PMA) of the ability to set interest and exchange rates, limiting its ability to stimulate their own economy. Nor, for reasons outlined before, could the PMA increase tariffs to revenue maximizing levels, a strategy favored by many developing countries that often experience difficulties collecting taxes. The lack of a well-functioning dispute settlement mechanism meant that there was little the PA could do to address these issues.[26]

Finally, the lack of well-functioning and transparent government in the PA has also contributed to the economic decline in the Palestinian territories. Indeed, reports of endemic corruption in the PA have been widespread. For example, very large sums in government revenue and donor aid remain unaccounted for, having been used by Arafat for patronage, and inefficient economic monopolies granted based on political favoritism continue to have an outsized presence in several sectors of the Palestinian economy. The extent of the corruption later prompted sustained efforts by the international community to promote domestic reform.[27]

Aside from injections of foreign aid and some evidence of liberalization, few economic benefits accrued to the PA as a result of the peace process. *Paris* was overly complex and decidedly inefficient, and the PA was notoriously corrupt. However, it was the restriction on goods and labor—both of which were at the heart of the new economic relationship—that had the greatest impact on the Palestinian economy. The failure to implement the protocol as negotiated inflicted further damage. By the end of the 1990s, the Palestinian economy teetered. Employment in Israel disappeared, trade links with the outside world diminished, and GNP fell by approximately 30 percent. Indeed, Pundak concludes that "the economic situation on the ground for the Palestinians became worse than they were before [the Oslo peace process]."[28]

Conclusion

It is easy to lose sight of the significance of *Paris* nearly twenty-five years after it was signed. It is a challenge not to see the prevailing economic conditions in the Palestinian territories as an extension of those imposed by Israel fifty years ago when the occupation began. But *Paris* was a noteworthy departure:

The protocol was not unilaterally imposed on the Palestinians, as the previous economic arrangements had been, and it was meant to be mutually beneficial. The Israeli team believed that economic cooperation would lead to positive spillover effects, thus reinforcing the fledgling peace process—an idea whose historical antecedents lie in postwar Europe.[29]

Contra neo-functionalists, Katherine Barbieri argues that economic interdependence may act to increase the likelihood of violent conflict rather than inhibiting it, as its neo-functionalist proponents suggest. She writes: "Asymmetrical economic interdependence creates tensions that may eventually manifest themselves in an inverse relationship between trade and conflictual interactions." Spillover effects can also run in the opposite direction, degrading relations, undermining cooperation, and entrenching conflict. The negotiators were, perhaps, overly sanguine about the promise of economic spillovers. After a brief period of implementation, Israel largely cast *Paris* aside, imposing wholesale closures on the Palestinian territories. As the Palestinian economy went into decline, so too did public support for a negotiated solution. In the words of the Israeli negotiator Moty Cristal, confidence building measures became "catastrophe building measures." Rather than having the anticipated effects, increased interdependence helped undermine the peace process. While the failure of the peace process was, perhaps, overdetermined, it is nevertheless a valuable exercise to reflect on how the economic protocol was a contributing factor.[30]

Notes

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1. Extension of conditions: See Arnon (2002, 2007); Farsakh (2008); Halper (2008); Levin (2007); Mitrani and Barnathan (2015, p. 300); Naqib (2003); Roy (1998, 1999, 2001).

2. Genealogical sensibility: Vucetic (2011). "History of the present": Roth (1981). Counter-history: Seidman (1994).

3. Neo-functionalist: See Haas (1958, 1964); Mitrany (1975). Diffusion of ideas: Checkel (1998, 1999a, 1999b, 2005).

4. Interviews: Interviews were conducted in Tel Aviv, East and West Jerusalem, and Ramallah in 2004 and 2011 with Ahmed Qurie (Abu Ala), Saeb Erakat, Yasser Abed Rabbo, David Brodet, Yossi Beilin, Yair Hirschfeld, Ron Pundak, Joel Singer, Uri Savir, Moti Cristal, Terje Roed-Larsen. Following the genealogical method, I treat these interviews as texts in need of interpretation. Private information: Fearon (1995); Schatz (2009). Triangulating evidence: Bennett and Checkel (2014); Checkel (2008).

5. As compared to: Newman and Yacobi (2004); Miller (1997); Peters and Dachs (2004). However, numerous studies examine the role of the EU in the Israeli–Palestinian peace process after Oslo. See, e.g., Adler (2006); Alpher (1998); Asseburg (2003); Bicchi (2006); Solingen (2003).

6. Five years' time: El-Jaafari and Elmusa (1995, p. 15); Gross (2000, p. 1555).

7. In the wake: Arnon and Weinblat (2001); Astrup and Desus (2001); Schiff (2002, p. 3). Prevented competition: Al-Botmeh and Kanafani (2006); Arnon (1997, 2007); Arnon and Weinblatt (2001, pp. 293, 295); Beilin (1999, p. 14); Brynen, Diwan, and Shaban (1999, p. 6); El-Jaafari and Elmusa (1995, p. 17); Gazit (1995); Gross (2000, p. 1551); Kleiman (1994, pp. 349–350; 1999, p. 247). Underinvested: Arnon (2007); Gross (2000, p. 1584).

8. Donors: Brynen (1996a, 1996b, 2000). Industrial zones: Shafir and Peled (2000).

9. Workers earned more: Schiff (2002, p. 26). Harmonized customs regime rules: Gross (2000, p. 1560). Payroll tax remittances: Kleiman (1994).

10. Product of negotiations: Arnon and Weinblatt (2001). Lose union: Kleiman (1994) argues that *Paris* contain elements of a common market as regards the movement of labor, a free trade agreement as regards the trade arrangements with countries that Israel did not enjoy economic or diplomatic relations, and economic independence as regards the prohibition of those goods finding their way into the Israeli market (pp. 371–372). It is also worth noting that the agreement itself referred to economic "envelopes" rather than "unions" which, according to Kleiman (1994, p. 370; 2010, p. 251), are associated with agreements between sovereign states. Integration: Balassa (2013).

11. Building confidence: Shafir and Peled (2000). "Something to lose": Gross (2000, p. 1587). Savir quote: Savir (1998, p. 29). Largely rejected: Ashrawi (1996).

12. Extant theories: Balassa (2013). Neo-liberals: See, e.g., Friedman (2009); Hayek (1944). On the pacifying effects of economic development, see Gartzke (2007); Hegre (2000); McDonald (2007, 2009). Neo-functionlist: Haas (1958, 1964); Mitrany (1975).

13. Preferential access: Arnon and Spivak (1998). Greater integration: Banister, *et al*. (2001, p. 93); Gross (2000, p. 1586). Brodet quote: Brodet (2004, p. 4). No contingencies: Arnon and Weinblatt (2001). However, the Israeli negotiator Ron Pundak, explained that "the Israeli negotiators were told to keep all options open, from a Palestinian state to continued occupation" (2012). Because Oslo did not introduce borders it did not prejudice the outcome of final status talks and had the merit of being reversible, should circumstances necessitate it (Kleiman 1994, p. 370; 2010, p. 251; Arnon and Weinblatt 2001, p. 291).

14. Peres quote: Peres and Naor (1993, p. 99). Pundak quote: (2012, interview); also see Scheel (2010).

15. Hirschfeld (2012, interview).

16. REDWG instead focused: Peters (1996). Quote: Peters (1996, p. 66).

17. Furthermore: Asseburg (2003); Diez, Stetter, and Albert (2006). Formalize: Diez and Pace (2007).

18. Diffusion: Checkel (1998, 1999a, 1999b, 2005). Model of diffusion: Checkel (1999a). Plenty of contact: Miller (2004).

19. Change in beliefs: Risse (2000); Checkel (2008). Persuasion quotes: Checkel (2008). Professional background: Haas (1992). Wishes to belong: Checkel (2008).

20. Goodness of fit: Haas (1992); Checkel (1999a). Policy failures quote: Haas (1992, pp. 3–4). Likely adopted quote: Checkel (1999a, p. 87). Convergence: Strang and Meyer (1993). Israel was primed: Aharoni (1998); Shafir and Peled (2000).

21. Insistence by PLO team: Kleiman (1994, p. 351). Access to Israeli market: Kleiman (1994); Arnon and Weinblatt (2001). Increasing level of development: Abbas (1995, p. 300). Israeli desire: Gross (2000, p. 1610); Arnon and Weinblatt (2001, p. 296); Schiff (2002, p. 33). Unsuccessfully demanded: The protocol did promise a "possibility of introducing ... [a] Palestinian currency" in the future, but this was never realized (Paris Protocol, 1994, Art. 7b).

22. European counterparts: Al-Dajani (1980); Kirişci (1986); Norton and Greenberg (1989); Dannreuther (1998); Miller (2004). Quote: Brodet (2004, p. 2). Also see Rabbo (2004).

23. Influx of aid: Arnon states that foreign aid amounted to "close to $300 per person per year," making the PA the world's highest per capita aid recipient (Arnon, 2007, p. 590). Sustained modernization: Schiff (2002, p. 17). Paying late: Arnon (2007, p. 588). Attacks aimed at civilians: Arnon and Weinblatt (2001, p. 301). Repudiation: This is, of course, not to mention the Israeli violations of the *Accords*, most notably the increase in the number of West Bank settlements during the same period. Quote: Pundak (2004, p. 4).

24. Border closures: Usher (1996, p. 36). Restricting movement: Akkaya, *et al*. (2011). Salam Fayyad quote: Fayyad (1999, p. 5). Immigration policies changed: Gross (2000, p. 1581). Drastic impact: Gross (2000, p. 1561).

25. Not permitted carriage: Banister, *et al*. (2001, pp. 67, 71). Corridor never materialized: Al-Botmeh and Kanafani (2006). Export cost and duration: Banister, *et al*. (2001, p. 52). Export decline: Arnon and Weinblatt (2001, p. 300).

26. Leakages: Al-Botmeh and Kanafani (2006). Savings: Schiff (2002, pp. 10, 25). Trade with Arab countries: Schiff (2002, p. 19). Ban of NTBs: *Paris*, Article III, 10. (Mis)use of standards: Gross (2000: 1551); Beilin (1999: 14); Brynen, Diwan, and Shaban (1999, p. 6). Palestinians also complained: Schiff (2002, p. 15). Absence of independent currency: Banister, *et al*. (2001). No revenue maximization: Gross (2000, p. 1604). Lack of dispute settlement mechanism: *Paris* created a joint economic committee charged with resolving matters that might arise during implementation. But the committee could not effectively arbitrate disputes as both sides enjoyed equal representation and therefore had a veto over any decisions. In the end, the committee did not address the majority of the issues that arose during the implementation phase and at no point attempted to renegotiate the terms of the protocol. See Al-Botmeh and Kanafani (2006); Arnon and Weinblatt (2001); El-Jaafari and Elmusa (1995).

27. Endemic corruption: Halevi (1998); Ramahi (2013). Patronage: Brynen (1995). Monopolies: El-Jaafari and Elmusa (1995, p. 23). Efforts to promote reform: PLC (2013); Fayyad (1999, p. 3).

28. Greatest impact: Astrup and Dessus (2001, p. 1). GNP fell: Roy (1999, p. 76); Levin (2007); Miarri and Sauer (2011). Quote: Pundak (2004, p. 5).

29. Mutually beneficial: Arnon (2007).

30. Barbieri quote: Barbieri (1996, p. 30). Decline: Nachtwey and Tessler (2002). Cristal quote: Cristal (2004, p. 4).

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The enemy votes: Weapons improvisation and bargaining failure

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Abstract

Belligerents could in principle avoid the *ex post* costs of conflict by revealing all private information about their violent capabilities and then calculating odds of success *ex ante*. Incentives to misrepresent private information for strategic gain, however, can cause miscalculations that lead to war. I argue some private information can lead to miscalculation not because it is purposefully misrepresented for strategic gain but because it is too decentralized to be easily revealed. The decentralized private information that produces improvised weapons requires a process of discovering suitable local resources and battlefield testing driven by local military entrepreneurs which frustrates information revelation. Decentralized private information used to improvise new weapons and capabilities like those which emerged in Afghanistan and Iraq show that it can take many years, decades, or even an indeterminate amount of time for fighting to reveal relevant information about violent capabilities.

> "What the layman gets to know of the course of military events is usually non-descript. One action resembles another, and from a mere recital of events it would be impossible to guess what obstacles were faced and overcome. Only now and then, in the memoirs of generals or of their confidants, or as a result of close historical study, are some of the countless threads of the tapestry revealed."
>
> —Clausewitz (1976 [1832], p. 112).

> "... it strains credulity to imagine that the parties to a war that has been going on for many years, and that looks very much the same from year to year, can hold any significant private information about their capabilities or resolve. Rather, after a few years of war, fighters on both sides of an insurgency typically develop accurate understandings of the other side's capabilities, tactics, and resolve."
>
> —Fearon (2004, p. 290).

In 2010, almost nine years after Coalition Forces invaded Afghanistan, a team of U.S. bomb technicians were reverse engineering an improvised explosive device (IED) found there. Compared to other home-made explosives, the device was simple—and intentionally so. Having been constructed from wood, foam, and odorless explosives the device was extremely difficult to detect. Worse, the team was struggling to determine what chemicals were being used to trigger the main explosive charge. They had been stumped by Afghan IED-makers who had earlier been stumped by Coalition metal detectors and bomb dogs. Neither party could have foreseen the capabilities to which each side would respond, as such information could not emerge without actual warfare prompting it to be discovered. If war prompts this continuous back-and-forth process of discovering new military capabilities, and if violence is restrained to the relatively low levels typical of an insurgency, how can the question of which belligerent is stronger be settled?[1]

The bargaining failure literature attempts to answer questions about why wars break out, persist, and end. For all sides, wars are extremely costly and these costs diminish the amount of resources left to be split once hostilities cease. These losses are potential gains to be captured if, *ex ante*, both sides can reach a bargain based on who the likely victor of a war would have been. Both sides could in principle bring knowledge of their resolve and military capabilities to the table and compare their relative positions, walking away with a bargain that redistributes wealth without having to first destroy any through fighting in order to discover who has the upper hand. The literature offers three main explanations for why this preferable state of affairs mostly goes unrealized and instead descends into war. First, the issues or resources being fought over are indivisible. Second, there are issues of credibly committing to the bargain. Third, there is private information about the relative resolve and military capabilities of one or more sides to the conflict. This uncertainty can cause miscalculations about relative strength that make war appear more attractive than it would be under perfect information.[2]

This third explanation comes with an additional caveat where agents are purely rational: Agents intentionally cause uncertainty as they are looking to gain strategic advantage from it, such as by lying about the number and location of their

nuclear submarines. This excludes explanations of uncertainty stemming from the irrational biases of imperfect agents, but it does not address persistent uncertainty about military capabilities stemming from issues of decentralized knowledge and military entrepreneurship. It also does not explain the long periods of continual adaption in military capabilities seen in wars such as those in Iraq and Afghanistan.

Using the example of improvised weaponry, this article addresses a deficiency in the private information explanation of bargaining failure. Improvised weapons, like the one that stumped U.S. bomb technicians, depend on highly decentralized information in their construction, and they produce highly decentralized information in their use. Decentralized information is difficult to incorporate into a centralized bargaining process and tends to create persistent uncertainty regarding relative capabilities instead. Warfare does reveal information but it also incentivizes the discovery of new capabilities when old ones fail to provide defense, at least partially offsetting the gains in information it otherwise provides.[3]

I take as given the restraint counterinsurgents show in escalating the level of violence to heights sometimes reached in conventional wars where improvised weapons, and the information they depend on and generate, may no longer matter. The nature of the weapons improvised in places like Afghanistan and Iraq would likely be inconsequential if Coalition Forces had resorted to total war or nuclear weapons. Instead, restrictive rules of engagement and a focus on nation-building give insurgents breathing room to discover weapons capable of influencing a (relatively) low-intensity, low-violence war. The bargaining failure literature extends to insurgencies, but argues that the difficulty of reaching a bargain in these types of wars comes from insurgent's superior knowledge of the local population and terrain, and from the weakness of local governments. While that may be correct, the insurgents' superior knowledge of local resources and enemy disposition should not remain unexamined.[4]

I also distinguish between adaptation as it occurs in conventional war and adaptation through weapons improvisation in insurgencies. Adaptation in conventional military capital tends to be standardized to facilitate mass production, and this makes calculating the changes in relative strength those adaptations represent easier. In contrast, improvised weapons are constructed from whatever resources are locally available which makes for a much higher number of unique weapons with unique contributions to insurgents' strength, making evaluations of relative strength far more difficult. The decentralized construction of many different improvised weapons is reinforced by the high costs insurgents would face in scaling up and standardizing improvised weapon construction. The larger their production operations the more obvious and easy to target they become for their conventionally stronger opponents.

Using the example of improvised weaponry, this article addresses a deficiency in the private information explanation of bargaining failure. Improvised weapons often depend on highly decentralized information in their construction and, correspondingly, they often produce highly decentralized information in their use. Such decentralized information is difficult to incorporate into a centralized bargaining process, and thus it tends to create persistent uncertainty regarding relative fighting capabilities. Warfare does reveal information, but it also incentivizes the discovery of new capabilities when old ones fail to provide defense, at least partially offsetting the gains in information it otherwise provides.

The article proceeds as follows. The next section explores the private information problem as currently viewed in the bargaining failure literature. The section thereafter demonstrates the impact of decentralized information on the bargaining process, with examples drawn from the Joint I.E.D. Defeat Organization's (JIEDDO) counter-IED (CIED) efforts in Afghanistan and Iraq. The final section concludes with the implications for the bargaining failure theory of war and the decision to go to war.

Private information in the bargaining failure literature

The problem of private information for the bargaining process has been widely explored in the bargaining failure literature. Fearon answers the most basic question: Aware that they could split a larger *ex ante* pool of resources by sharing information instead of fighting, why would rational combatants choose to keep private information about their capabilities hidden? The answer is that, as compared to peaceful negotiation, the parties retain an element of potential surprise each believes may lead to a favorable outcome in war. As Meirowitz and Satori show, the strategic advantages that come from private information can be so great that not only do agents withhold it, they also choose to invest in military capabilities that generate it.[5]

Just which private information is considered relevant for the bargaining process necessarily changes with the kind of war being fought. Information about where the best guerilla hideouts are in a mountainous region being held private matters far more in a low-intensity insurgency than it does in a nuclear war. Indeed, weapons improvisation tends to occur more often in insurgencies than in conventional wars because of the relatively lower level of violence. The bargaining failure literature does explore the question of private information in these kinds of wars: Insurgents tend to have superior

knowledge, that they can keep hidden, of not just the local terrain but also of the local population and local government.[6]

Whatever the nature of the private information, however, the bargaining failure literature treats the private information problem as a temporary one. After all, there is no intrinsic value in holding a secret. The secret is valuable only when combined with action and that action then reveals the secret, allowing beliefs about the probability of victory to converge and making bargaining more likely. War is taken to be a quick and effective revealer of private information concerning military capabilities both, because those capabilities are not thought to change very much and because the stakes are so high that there is intense pressure to capitalize on any advantage as quickly as possible. The incentive to exploit advantages is therefore enough to prompt the quick and reliable revelation of private information that may have hindered the bargaining process.[7]

Entrepreneurship does not feature prominently in the bargaining failure literature. The intentional generation of private information could be considered an entrepreneurial act, and sustainable entrepreneurial search for new and better solutions to the problems posed during war is not present in the theory. Existing models allow for secretive investment in an aggregate measure of strength that is then revealed during a subsequent phase of fighting or for the capture of homogenous objectives—usually forts—during a phase of fighting that then has an impact on a subsequent bargaining phase. The literature contends that the more phases of bargaining and fighting there are in a war, the more certain both sides become regarding their relative capabilities. Technological change, however, is recognized as an impediment to this march toward certainty. Technological change is driven by military and commercial entrepreneurs and can generate new information that must be discovered through fighting, but the literature treats this kind of change as relevant for assessments *between* wars rather than assessments *within* a given war. Relevant technological change comes too slowly for it to enable private information to be a persistent problem.[8]

To summarize, the main theoretical stream of bargaining failure due to private information rests on some critical assumptions. First, actors involved in bargaining and fighting are either unitary or else experience little difficulty in relaying newly discovered information (internally or externally) from discoverer to bargainer. Issues of credibility are explored in the literature but are separately considered. Second, private information is only a rational explanation for war if it is being consciously misrepresented for strategic gain. Nonrational explanations may include mistaken interpretations and biases but these are separately considered. Third, war quickly and reliably reveals private information about military capabilities regardless of the type of war. This is due to the strong incentive to quickly exploit informational advantages and due to technological change occurring too slowly to outpace the discovery process of warfighting in a sustained way. These three assumptions are challenged in the next section.

Improvised weapons and decentralized information in Afghanistan and Iraq

Using unitary actors in the bargaining failure model has certain advantages in terms of simplicity, but a proper analysis of the private information problem requires that we introduce more complexity. Hayek noted that one of the chief problems a central planner faces is that of acquiring the vast sums of information needed to direct economic activity. Localized knowledge of where resources are, where they are wanted, and what can be done with them creates what Hayek called a "division of knowledge" no less complex than the familiar division of labor. Where a bargainer is dealing primarily with standardized military forces, the problem—though still daunting—is more manageable. A far more difficult problem is faced when trying to communicate the local knowledge of all weapons improvisers concerning what inputs are available for their craft, and what they expect to be able to achieve with them, to a bargainer in a manner that is timely and which will not overload the bargainer with information.[9]

The principal–agent problem at play here is not one of misaligned incentives. Even assuming perfectly aligned interests between bargainers and weapons improvisers, the capacity of bargainers to receive all necessary information, and the capacity of weapons improvisers to transmit all necessary information, is as much in doubt as the ability of all economic actors to transmit the necessary information they have to a central planner. The private information needed to produce improvised weapons, and the private information those weapons themselves produce, is so decentralized in nature that bargaining failure occurs simply due to the complexity of the knowledge problem. While prices serve as efficient means of communicating decentralized information in markets, there is no corresponding mechanism in warfare. An exploration of how numerous and heterogenous are the inputs into improvised weapons will show the overwhelming nature of the knowledge problem which thus far has been obscured by reliance on aggregate measures of "strength" or "deadliness" that fit better into formalized models.[10]

In the making of IEDs set off by the movement or actions of their victims, Afghan improvisers worked with a wide variety of inputs just in the construction of the triggering device. They used saw blades, strips of aluminum foil from cigarette packets,

bed springs, bike springs, planks of wood, strips of foam, water bottles, shampoo bottles, ballpoint pens, and still other civilian goods and resources. Casings for IEDs could be found in ordinary items like slow cookers or propane tanks or pipes, or in military items like artillery shells or ammunition cases. Fragmentation effects could be achieved with nails, screws, scrap metal, rocks, and other perfectly common resources. More advanced explosive effects could be achieved with copper when superheated by the detonation of an IED, and that copper could be found in home electrical wiring, home appliances, TV sets, computers, and other sources. The explosives themselves came from multiple sources, with the two most common being potassium chlorate (the substance that makes matches burn) and fertilizers like ammonium nitrate.[11]

It is tempting to think that the problem faced by the weapons improviser is that of discovering the single-most cost-efficient IED that can be produced from this myriad of possible inputs, but it would be foolish to draw this conclusion. Instead, the improviser is engaged in constantly discovering the most cost-efficient designs which are compatible with shifting resource availability, changing prices for inputs, and a dynamic war against an adaptive opponent. If, say, metallic inputs produced the most cost-efficient IED and the weapons improviser came to rely on those metallic inputs, then the opponent could drastically improve the odds of victory by investing heavily in metal detectors. To remain effective, the improviser has to substitute into other inputs made of plastic or wood, for instance. Constant change of design, and thus constant change of inputs, characteristics, and effects, is a necessity for the weapons improviser.

The list of possible inputs into IEDs given above was a small selection. Other examples are discussed further on in this article. The total list of possible inputs is unknowable for the simple reason that war causes a tremendous shift in priorities and results in resources intended for home or commercial uses to be diverted to the pursuit of victory. In dire enough situations weapons improvisers emerge to "throw the kitchen sink" at the problems imposed by their enemies, meaning their search of suitable inputs spans both military goods and all civilian goods. Organizing such a list of possible inputs and their possible effects is clearly an impossible task, and such a list would give bargainers what military professionals call "analysis paralysis". The only way for this decentralized information to be uncovered is through the efforts of dispersed improvisers to conduct local searches. The local nature of the information they depend on (for instance, this region has plentiful sources of copper wiring and is heavily trafficked by armored vehicles) and constantly changing environment ensure that relevant information about military capabilities remains privately held at levels below the bargainer.

A few challenges may be raised to the argument that this kind of decentralized information is relevant. It may be said that production of successful improvised weapons will be scaled up the way production of a successful commercial product is. This would make knowledge of a weapon's characteristics and effects widespread and make concern over the process of discovery a temporary matter at best. This does not happen for two reasons. First, scaled up production requires more machinery and larger buildings. These are more easily identified and targeted by counterinsurgent forces than a less productive but also less conspicuous private home. Second, scaled up production requires reliable access to the same inputs, and unless one is to assume that no effort is made to deny access to those inputs one must conclude that changes in weapon design will be frequent. In fact, attempts to control or ban access to explosive materials resulted in shortages and high prices for inputs like fertilizer. Improvised weapons have a plethora of substitutes, though, and when improvisers were forced to switch from fertilizer explosives to cheaper or legal substitutes the result was a change in the characteristics of their weapons, namely larger explosive yields.[12]

Another challenge that may be raised is that the individual characteristics of the improvised weapons do not matter for the bargaining process, only some notion of their aggregate "effectiveness" or "deadliness". Ignoring the obvious problem of how such an aggregate would be measured or defined, the deeper problem is that different improvised weapons are created for different purposes and will also produce different effects depending on the countermeasures they face. Some IEDs are created to target personnel on foot, some are designed to function in urban environments rather than in open fields, some are designed to punch through vehicle armor, and so on. Attempting to find an aggregate measure of their "effectiveness" makes no more sense than searching through the Army's bridging vehicles, earth movers, armored personnel carriers, and tanks for a measure of their "vehicleness". Moreover, two improvised weapons with the same explosive yield may be thought to be effectively the same, but if jamming efforts can block the signal receiver of one and not of the other then any measure of their actual effectiveness would differ where those jammers were present. The complexity of the input problem and the unique weapons that improvisation produces cannot be usefully abstracted away.

Since the nature of the private information used in the construction and fielding of improvised weapons is decentralized, it should not surprise that neither the counterinsurgent nor the insurgents themselves begin their war

with anything like full knowledge of the effect those weapons may have. The trouble improvisers would have trying to share their local knowledge combined with the lack of incentive to discover that knowledge before war breaks out (that is, the incentive to use civilian goods for civilian purposes absent a war) makes for a situation where relevant private information exists and remains private despite no one intentionally misrepresenting it.

The incentive to discover improvised weapons comes with the failure of the conventional weapons that were supposed to defend the area the improviser is in. Coalition Forces invaded Afghanistan on 7 October 2001. The initial phases of the war showed the destructive power of Coalition air forces and special operations teams. The Taliban put up what conventional resistance it could until losing their last major stronghold of Kandahar in November 2001, less than two months after the first strikes. The rapid destruction of easy to identify and target conventional forces like Afghanistan's MIG fighter jets and heavy artillery then incentivized a quick transition into relatively safer guerilla tactics and, later, improvised weapons. One of the earliest reports of an IED attack comes from March 2002. While this report shows the beginnings of improviser response to Coalition-imposed incentives to avoid direct confrontation, IEDs did not surpass direct fire ambushes (a comparatively higher-risk method of producing defense, given Coalition conventional superiority) as the Afghan insurgents' preferred method of attack until April 2008. Instead, starting low at the beginning of the war, the number of effective (resulting in death or injury) IED incidents grew from just 36 in 2004, to 127 in 2006, and to 820 in 2009.[13]

The growth of IED use is even better illuminated in percentage terms. Relative to the prior year, effective incidents of IED use increased by 108 percent in 2006, 62 percent in 2007, 88 percent in 2008, and 112 percent in 2009. The Center for Strategic and International Studies' IED Metrics for Afghanistan stops recording incidents in May 2010, but comparing January through May of 2009 and 2010 shows a further 241 percent increase in effective IED incidents, with a total of 135 effective incidents in the month of May 2010 alone. In 2008 IEDs began accounting for over 50 percent of American forces killed in Afghanistan in a year, and nearly 66 percent of all American forces killed in Afghanistan in 2011. The Taliban, and other Afghan insurgents, were slow to realize the impact the IED could have on Coalition forces. Had they held private information about how effective the weapons could be, there would have been no reason for them to attempt the conventional forms of resistance that ended so quickly and catastrophically. The six year transition away from direct fire ambushes to IED attacks and the sustained large changes in the number of effective incidents year after year reveal a very long process of insurgents discovering their own private information.[14]

The problem of private information in the form of highly decentralized knowledge, which is constantly changing as opponents adapt to one another, is all the more serious for the bargaining process if it is too complex for the information revealing properties of warfighting to cope with. War is widely treated as a quick and reliable method of revealing private information in the bargaining failure literature. The more warfighting struggles to reveal relevant private information, the longer that war must become before a bargain can be reached. Smith and Stam have argued that technological change could cause beliefs about the probability of victory to diverge but there is currently a hole in the bargaining failure literature regarding whether or not technological change can occur rapidly enough within a given war to explain why, for instance, insurgencies last so much longer than other wars.[15]

The vast number and heterogeneity of inputs into improvised weapons offers great adaptability to the improviser. This adaptability is, in reality, technological change tailored to meet the demands of the situation the improviser faces. Where new models of traditional military capital, like jets, can get stuck in development for decades, the makers of IEDs in Afghanistan and Iraq were often able to alter their designs within months, making previously useless bombs useful once again. The constant changes and improvements made just to the subset of IEDs known as remotely triggered IEDs serves as an excellent demonstration of how the information-revealing properties of warfighting can be outpaced by the rate of technological change.

Remotely triggering IEDs is generally the preferred method of detonating IEDs because of the safety it offers the triggerman and the flexibility it allows in timing attacks. These properties provide ample incentive to improvise new remote triggering devices when old ones are countered, even when opposition forces are sinking nearly a billion dollars into anti-remote triggering measures year after year. Afghan insurgents began remotely detonating IEDs with a very crude weapon called the Spider as early as 2002, before JIEDDO had been formed. The Spider used radio receivers and digital signal decoders like those found in commercially available walkie-talkies, lamp bases from fluorescent lights converted into firing circuits, and whatever explosives were available. Pre-JIEDDO efforts such as the Warlock family of jammers were intended to jam the frequencies these devices operated on or to pre-detonate them, and they were successful at first. This spurred improvisers to search for alternate remote triggering methods. Improviser

search of local civilian goods revealed garage door openers and key fobs which operated at a lower power level than what the Warlock could pick up and modify in time to work. A back and forth between new remote triggers and jamming on new frequencies and power levels ensued until somewhere between 2006 and 2007 when JIEDDO combined a variety of jammers so as to win the fight over the use of the electromagnetic spectrum. By the end of 2007 JIEDDO had increased the number of jammers being used by the Army and Marine Corps up to 37,000 and was claiming to have reduced the use of remote triggering across Iraq and Afghanistan from 80 percent of IEDs with identified triggering mechanisms to 20 percent. However, the same also report notes that the number of IED incidents in Afghanistan grew during that same year, and while remote triggering fell out of favor in Iraq it continued to be the preferred method of detonation in Afghanistan. The different contexts in which the wars were taking place produced different results for JIEDDO's countermeasures, and even what success they had would be short-lived.[16]

In December of 2007, Lieutenant General Thomas Metz became head of JIEDDO, when jamming efforts were enjoying overall increased success. Two years later, in October 2009, in a Congressional hearing on defeating IEDs he was asked to comment on the performance of the jamming technologies that JIEDDO continued to invest in. His response was:

> "Well, sir, it was interesting when I took over from General Meigs, he said, 'The good part about your tenure is you are going to be out of the jamming business.' The problem is the enemy votes, and the enemy has stayed adaptive in his use of the electromagnetic spectrum. So although we thought we had done enough in the jamming business that it would then transition to the services, we needed to stay in the jamming business because the enemy decided to move to different frequencies and make things more complex."[17]

The fight for the electromagnetic spectrum had been going on for over five years by the time General Meigs made his claim about being out of the jamming business. He believed that the march toward certainty about relative capabilities had been completed, but in 2008 JIEDDO was still funding jammer research and updates while increasing the number of deployed jammers up to 47,000. In 2009 Lieutenant General Metz was admitting that the jamming approach to defeating IEDs cost "... in a couple of those years close to $1 billion" and that remotely detonated IEDs remained a significant concern. The JIEDDO annual report for 2010 gives little detail on the actual jamming technologies pursued but does still have them listed as an ongoing investment, and therefore an ongoing threat.[18]

The eight years between the Spider and JIEDDO's 2010 annual report were characterized by constant change and uncertainty in the fight over remotely detonated IEDs, contrary to what the bargaining failure theory would predict after such a long period of fighting. JIEDDO annual reports from 2006, 2007, and 2008 all cite the three trillion dollars in annual investment worldwide by the information technologies industry as providing ample resources for insurgents to use as substitutes for older remote triggering methods. JIEDDO's 2009 annual report specifically gives credit to frequent advancements in commercial cell phone and radio technologies as the factor enabling insurgents to innovate on remote triggering methods faster than JIEDDO could innovate on jamming technologies between 2002 and 2008. Mobile phone subscriptions in Afghanistan increased from 470,000 in 2004 to 12.5 million in 2010, meaning cell phones became commonly available for improvisation during the occupation. Cell phones were favored inputs for more than just their ability to send signals. Modern cell phones can overcome connection problems such as reflected signals and transmission errors, and these features unintentionally helped insurgents defeat even the combined efforts of the Warlock jammers in operation prior to 2006. The ubiquity of these phones, their robustness against signal jamming, and the multiple frequency bands they could operate on made them the preferred remote triggering method in Afghanistan up through 2007.[19]

The incremental progress of JIEDDO's jamming systems eventually drove up the relative cost of remote detonation for Afghan insurgents enough so as to cause them to favor other triggering methods such as victim-operated or command-wire detonated, although they never forced them off remote detonation altogether. By 2010 Afghan insurgents had had roughly three years of high operating costs in remote detonation thanks to JIEDDO's jammers. Three years of search spurred by these costs led improvisers to discover a substitute that used the unique high-powered radio waves produced by Coalition jammers as a triggering mechanism. Such an IED makes the use of jammers dangerous and opens the door again for developments in remote detonation if jammers are turned off to avoid it, sparking a new round of discovery regarding relative capabilities.[20]

In this one subtype of IED alone there were eight years of search and uncertainty. The continuous pressure of occupation led to sustained innovation, made possible by unaccounted for masses of adaptable civilian goods and resources and which lasted far longer than existing theories allow for. The technological change made possible by improviser adaptation

was aided by civilian technological development. New cellular technologies and hardware are constantly being put out to the market and, combined with the improviser's ability to iterate on designs quickly, the result is a rate of technological change that can frustrate war's information-revealing properties within a given war rather than in the longer periods between wars.

Conclusion

Weapons improvisation helps weaker belligerents frustrate better armed and funded militaries by creating uncertainty around important military capabilities. Improvisation is a form of substitution, and substitution spurred by a cost increase increases with time. The counterinsurgency strategies that prevail today depend on long time lines to subdue the insurgency and address its social, political, and economic roots. Counterinsurgency strategies that depend on long time lines to perform "clear, hold, and build" operations play directly into the strength of weapons improvisers who use that time to find substitutes. Moreover, counterinsurgency best practices usually involve foot patrols that put counterinsurgents in closer contact with the local populations they wish to influence. Without this close contact the counterinsurgent has difficulty gaining the trust of the population and gaining access to local intelligence. Improvised weapons like IEDs tend to push counterinsurgents into the greater protection of vehicle-mounted patrols, which prevents them from easily interacting with the local population that is supposed to be their prize. Given these difficulties, a second look is necessary whenever planning a war against what appears to be a weak opponent. Their apparent weakness could quickly turn into adaptability sufficient to resist overly optimistic foreigners. If a nation is dead set on fighting a weaker opponent, this analysis of weapons improvisation suggests a quick and limited war with goals and time lines drastically cut back—where feasible in political, budgetary, military, moral, and other ways.

Notes

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1. Main explosive charge: Higginbotham (2010).

2. Bargaining failure literature: Blainey (1988); Fearon (2004); Powell (2004). Three main explanations: Fearon (1995). On bargaining and bargaining theory generally, see Anderton and Carter (2009); Anderton (2017).

3. Gain strategic advantage: Powell (1993).

4. Weakness of local governments: Fearon and Laitin (2003); Fearon (2004); Walter (2009).

5. Peaceful negotiation: Fearon (1995). Invest in military capabilities: Meirowitz and Satori (2008).

6. Superior knowledge: Fearon and Laitin (2003); Fearon (2004); Walter (2009).

7. Not thought to change much: Fearon (2004). Intense pressure to capitalize: Blainey (1988); Fearon (1995); Wagner (2000); Powell (2004).

8. Entrepreneurship does not feature: Reiter (2003). Subsequent bargaining phase: Meirowitz and Satori (2008). Assessments between wars: Smith and Stam (2004).

9. Hayek: Hayek (1948).

10. Central planner: Hayek (1948).

11. Explosives from multiple sources: JIEDDO (2011); Burton (2007); Dawar and Abbot (2012).

12. High prices: Abbot and Dawar (2012). Explosive yields: Mulrine (2008).

13. March 2002: Shachtman (2011). April 2008: JIEDDO (2008). 2009: Allison, Cordsman, and Lemieux (2010).

14. Effective incidents increased: Allison, Cordesman, and Lemieux (2010). 2011: Dao and Lehren (2010); Porter (2012).

15. War is widely treated: Blainey (1988); Fearon (1995); Wagner (2000); Powell (2004). Insurgencies last longer: Smith and Stam (2004).

16. Anti-remote triggering measures: Snyder (2009). As early as 2002: Shachtman (2011). Search of local goods: Shachtman (2011). By end of 2007: JIEDDO (2007).

17. Quote: Snyder (2009).

18. Up to 47,000: JIEDDO (2008). Annual report 2010: JIEDDO (2010).

19. Annual reports: JIEDDO (2006, 2007, 2008). 2009 annual report: JIEDDO (2009). Mobile phone subscriptions: Harpur (2017). Unintentionally helped insurgents: Shachtman (2011).

20. Three years of search: Higginbotham (2010).

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The evolution of revolution: Is splintering inevitable?

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Abstract

We use an evolutionary model to study splintering within rebel groups. We assume that rebels possess cultural traits that encourage cooperation, defection (splintering), or a trigger behavior like Tit-For-Tat. We characterize the dynamic process by which rebels' discount rates determine whether splintering will occur in the rebel population even when cooperation is otherwise efficient. The results suggest that political action by governments that make rebels impatient also increases the likelihood of rebel group splintering. This may be counterproductive from a government's point of view. Our article closes a gap in the literature by providing a theoretical model for how rebel groups form. Policies that affect the patience of rebels and change the cultural context within rebel groups influence the likelihood of rebel group splintering. This article's contribution to the literature is twofold. First, it applies an established modeling approach to understand how even otherwise cohesive rebellions can splinter as a consequence of exogenous shocks that change rebels' time horizons. Second, we highlight how cultural context can influence this splintering process.

Analysis of conflict often suggests that rebels do not always cooperate. Rebels often begin by cooperating but then splinter into warring factions and conflict is prolonged. The *Mapping Militant Organizations*, a Stanford University website, dramatically illustrates this for countries like Iraq, Pakistan, and Somalia. Other groups do not necessarily splinter, like Al-Qaeda in Iraq (AQI) for instance, which has coordinated rebellious activities in response to U.S. anti-insurgency operations.[1]

Using an evolutionary game-theoretic model, we analyze the process that drives splintering, or cooperation, among rebels. The rebels' goal is to produce political acts of rebellion that generate private benefits for the rebel population, even as these acts may be socially disruptive. When rebels cooperate, the number of political acts produced is controlled and restricted, thus leaving space for productive activity of a nonpolitical nature. However, if rebels splinter, competitive pressure increases the number of political acts produced at the expense of nonpolitical acts. Thus, from the perspective of productive nonpolitical activity, cooperative rebels are better for society than splintered or defecting rebels. From the rebels' perspective, likewise, cooperation is better than splintering as well, as cooperation maximizes rents.[2]

The question, then, is why rebels do not always cooperate with each other. To address this, we build a theoretical model that seeks to identify fundamental conditions under which rebel groups splinter (or cohere).

We use a standard evolutionary model to study the evolution of cooperation among rebels. Rebels belong to one of three cultures, a culture of *cooperation*, *defection*, or else a *trigger* culture (explained later on). Rebels are boundedly rational in the sense that they do not strategize about whether to cooperate or not. Instead, replicator dynamics guide their behavior, i.e., if cooperation guarantees greater benefits than defection, the proportion of rebels in the population who follow (replicate) a culture of cooperation will be larger than the proportion of rebels adhering to a culture of defection. Rather than focusing on optimal individual strategies, this modeling approach aims to elucidate what sort of behavior is more likely to be successful in a population as a whole. Moreover, this type of modeling shows how the splintering (or cooperative) process may evolve as a consequence of changing cultural or warfighting contexts.[3]

A policy implication of our model is that counterinsurgency interventions aimed at increasing rebels' degree of patience are more likely to promote rebel group cohesion, while interventions aimed at directly changing the proportions of different rebel cultures through attrition, coercion, or persuasion will contribute to rebel group splintering. For instance, by selectively killing all those belonging to a certain rebel culture, or by altering rebels' time horizon, a militaristic counter-rebel policy may encourage rebel splintering if it changes the distribution of cultures among rebels. Our modeling approach can be used to predict whether or not militant groups will coordinate their actions against the national government.

Table 1: The basic evolutionary stage game

	Cooperate	Defect
Cooperate	$e/2$ e/2	0 αe
Defect	αe 0	$\alpha(e/2)$ $\alpha(e/2)$

Note: The first row in each payoff cell is for the row player, the second row is for the column player.

As compared to splintered rebel groups, cooperative rebels maximize the effect of their political acts even while increasing time for nonpolitical productive activity. Why then do rebel groups splinter at all? This article identifies fundamental conditions under which rebel groups are likely to split. The insights gained carry implications for government counter-rebel strategy.

Literature review

A strand of the conflict literature close to our approach has focused on the organization of rebel groups. It models entrepreneurial rebels who maximize current or future profits. But most of the literature that address civil strife, possible motivations of rebel leaders, choice of targets, and/or the effect of deterrence differs from our approach.[4]

A number of case studies have empirically explored possible causes for splintering. Several studies have found that competition among rebels for the "affection" of a particular ethnic group may encourage them to "outbid" each other in extremism and thereby increase the level of violence. Generational changes in leadership may fracture rebel groups, and government policies may exacerbate this process when killing top leaders. One scholar theorizes that extremism may increase as rebellions splinter, while others suggest that peace negotiations between the state and rebel groups may be responsible for increased splintering and concomitant violence. Existing divisions in society may also encourage splintering, while cohesive social bonds seem to discourage it. Rebels also may splinter out of disagreement over a strategy to be pursued or a tactic to be taken. Finally, government pressures may break up rebel groups because of commitment problems. But no single model captures the dynamic process to predict whether a group will break up or not.[5]

The model we present shows how rebels' incentive to cooperate evolves as a function of exogenous factors, such as the proportion of the population that happens to cooperate and the population's level of patience. The model thereby answers the question as to the dynamic conditions under which rebels coalesce into groups.

Recent experiments have studied cooperation and defection in the laboratory. The results support our theoretical finding that even extremely patient rebels may not cooperate. However, these studies do not explicitly study the evolution and the path of cooperation over time. Closest to our approach is one that suggests that in a finite setting, when an external manipulator can arbitrarily reward or penalize players, cooperation may not evolve. We extend this result to the case when repetition is infinite and there are no external manipulators.[6]

We introduce the model, and the payoffs pertaining to rebels in each culture, in the next section. These payoffs determine how fit each culture is in relation to the others. In the section thereafter, we derive the conditions that determine whether a culture will succeed over time or not. In the penultimate section, we investigate the dynamics of how rebel cultures may evolve. In the final section, we discuss some policy implications of our model and conclude.

The evolutionary game

We use an evolutionary game-theoretic model to study rebel interaction. We assume, as is usual for evolutionary games, that individuals are endowed with a strategy that corresponds to an underlying culture, or "genotype". Rebels interact with each other in random pairwise encounters which determine player payoffs and the fitness of each particular culture. Rebels observe their own payoffs and those of other rebels in different cultures. Over time, they adopt, i.e., learn, fitter strategies.

Whenever a pair interacts, rebels solve a coordination game in which two actions are available: cooperate and defect. Cooperate corresponds to the concerted effort of civil war and coordinated revolution by rebels, and defect corresponds to individualistic attempts at terror-like warfare. If both rebels choose cooperate, each gets a "fitness reward" of $e/2$, where e is the total level of rents from cooperation. However, if one rebel cooperates while the other defects, then the cooperating rebel gets 0 while the defecting rebel gains αe, where α captures the incentive to defect. Finally, if both rebels defect, both earn $\alpha(e/2)$, as shown in Table 1.[7]

The larger is α, the greater is the incentive to defect. We restrict the value of α in (0, 1). For α in (0, ½) the game is a Stag Hunt (SH) game, while for α in [½, 1), the game is a Prisoner's Dilemma (PD) game.[8]

While it is possible for the rebels to use many different strategies over time, we focus on three particular strategies, or cultures. Researchers have identified, in the context of a PD game, the strategies most commonly used by players when

Table 2: The evolutionary stage game for repeated cultural interaction

	Always cooperate	Always defect	TFT
Always cooperate	$e / 2(1-\delta)$ $e / 2(1-\delta)$	0 $\alpha e / (1-\delta)$	$e / 2(1-\delta)$ $e / 2(1-\delta)$
Always defect	$\alpha e / (1-\delta)$ 0	$\alpha e / 2 (1-\delta)$ $\alpha e / 2(1-\delta)$	$\alpha e+\delta\alpha e/2(1-\delta)$ $0+\delta\alpha e/2(1-\delta)$
TFT	$e / 2(1-\delta)$ $e / 2(1-\delta)$	$0+\delta\alpha e/2(1-\delta)$ $\alpha e+\delta\alpha e/2(1-\delta)$	$e / 2(1-\delta)$ $e / 2(1-\delta)$

Note: The first row in each payoff cell is for the row player, the second row is for the column player.

repeatedly interacting over time. One strategy or culture is to choose to *always cooperate*. A second strategy is to *always defect*, the individualistic action. A third commonly used strategy is the Tit-For-Tat (TFT), or *trigger*, strategy. Here, behavior depends on what the other player has chosen to do in the prior time period. A rebel playing TFT will choose cooperate at the beginning of the pairwise interaction and then, in any subsequent period, will select the action chosen by the player with whom s/he was matched in the prior period.[9]

The players' payoffs from pairwise interactions over time are shown in Table 2. The payoffs for the cases in which both rebels choose *always cooperate* or *always defect* are as shown in the Table 1, but discounted by the term $(1-\delta)$ to account for infinite repetition of the interaction. The discount rate, δ, measures the rebels' level of patience. A value close (but not equal) to 1 indicates high willingness to wait for later rewards. In contrast, a low level is a sign of impatience and inability to wait for future rewards.

If a rebel from a defector culture meets a cooperator, then the defector's payoff is $\alpha e/(1-\delta)$, while the cooperator's payoff is zero. When one of the two rebels is endowed with the TFT strategy, if s/he meets a cooperator, they will cooperate in the first and in every subsequent period. Both players' payoff is $e/2(1-\delta)$, i.e., $e/2$ as in Table 1, but discounted. The same payoff is obtained if the TFT rebel interacts with another TFT player. In contrast, if the TFT player meets a defector then, in the first period, the TFT rebel will cooperate, while the other player will defect. In every future period, therefore, both rebels defect, wherefore the TFT rebel's payoff is $0+\delta\alpha e/2(1-\delta)$, while the defector's is somewhat larger at $\alpha e+\delta\alpha e/2(1-\delta)$. The second term in both expressions corresponds to the payoff from defecting forever while interacting with a defector. The first term for the TFT player is the payoff from cooperating while interacting with a defector (i.e., 0), while the first term for the defecting player is the payoff from defecting while interacting with a cooperator (i.e., αe).

Table 2 captures the evolutionary stage game and we will use replicator dynamics to check the evolutionary stability of each strategy. Replicator dynamics guide players' behavior based on the notion of Darwinian selection: A strategy with higher relative payoffs will tend to grow within the population; strategies that yield lower payoffs will tend to die out. As individuals are randomly matched and play the stage game, replicator dynamics predict the evolution of play over time as a function of the relative average fitness of each strategy in the population at each point in time. The replicator dynamic process determines so-called basins of attraction, which are unstable population mixes of strategies. Within a basin, attractors are regions where the certain mix of strategies becomes stable.[10]

Let p_C denote the initial proportion of cooperators in the population, and p_T the initial proportion of TFT rebels. Consequently, since the strategy proportions must sum to 1, the initial proportion of defectors is $1-p_C-p_T$. The expected fitness for the always cooperate, always defect, and TFT strategies are, respectively, as follows:

$$(1)\quad E\pi_C = p_C\left(\frac{e}{2(1-\delta)}\right)+p_D 0+p_T\left(\frac{e}{2(1-\delta)}\right),$$

$$(2)\quad E\pi_D = p_C\left(\frac{\alpha e}{(1-\delta)}\right)+p_D\left(\frac{\alpha e}{2(1-\delta)}\right)+p_T\left(\alpha e+\frac{\delta\alpha e}{2(1-\delta)}\right),$$

$$(3)\quad E\pi_{TFT} = p_C\left(\frac{e}{2(1-\delta)}\right)+p_D\left(\frac{\delta\alpha e}{2(1-\delta)}\right)+p_T\left(\frac{e}{2(1-\delta)}\right).^{11}$$

Given the initial distribution in the population of cooperators, defectors, and TFT-players, some strategies will be fitter than others. To compare the average fitness of the TFT strategy with that of the always cooperate strategy, consider equations (1) and (3). TFT is fitter (or greater) than always cooperate when

$$\left(\frac{e}{2(1-\delta)}\right)\left[(p_C+p_T)(1-\delta\alpha)+\delta\alpha\right] > \left(\frac{e}{2(1-\delta)}\right)\left(p_C+p_T\right),$$

an expression that simplifies to

$$(4)\quad p_C + p_T < 1.$$

Inequality (4) is depicted in Figure 1. The shaded region

shows the proportions of players such that TFT is fitter than the always cooperate strategy. The boundary is negatively sloped and independent of the patience parameter, δ. Moreover, the p_C and p_T intercept are always at 1.[12] Since the proportions of players endowed with a particular strategy never exceed 1, constraint (4) will always bind. In other words, the TFT strategy will always be fitter than the always cooperate strategy in this evolutionary setting. This leads to the following result.

Result 1. The fitness of the TFT strategy is independent of δ and, for all values of $p_C, p_T \in (0, 1)$, always exceeds the fitness of the always cooperate strategy.

To compare the average fitness of TFT and always defect, consider equations (2) and (3). TFT is fitter than always defect for an expression that simplifies to

$$(5)\quad p_C > \frac{\alpha(1-\delta)}{\left[1-\alpha(1+\delta)\right]} - \frac{(1-\alpha)p_T}{\left[1-\alpha(1+\delta)\right]}.$$

The slope of inequality (5), $dp_C/dp_T = (1-\alpha)/[\alpha(\delta+1)-1]$, decreases as δ rises and is positive or negative depending on whether $\alpha(1+\delta) > 1$ or < 1, respectively. When $\alpha < ½$, the game is a Stag Hunt game and, for any plausible value of δ, $\alpha(1+\delta) < 1$. Inequality (5) will then have a negative slope. Figures A2a and A2b (in the Appendix) depict the inequality for $\alpha = 0.2$ and two different values of δ (0.27; 0.77). In the shaded regions, the TFT strategy is fitter than always defect. As δ rises, the inequality's slope falls, while remaining negative, and both the horizontal and vertical intercepts become smaller.[13] Therefore, the shaded areas increase with δ as inequality (5) shifts toward the origin at which point $\delta = 1$. We can then state:

Result 2. For $\alpha < ½$, the space in R^+ (where the population proportions that guarantee the TFT strategy to be fitter than the always defect strategy) gets larger as δ increases.

Thus, in a Stag Hunt setup (with $\alpha < ½$) an increase in δ increases the likelihood that TFT is fitter than always defect.

When $\alpha > ½$, the stage game is a Prisoners' Dilemma game and inequality (5)'s slope can be either positive or negative, depending on $\alpha(1+\delta) > 1$ or $\alpha(1+\delta) < 1$, respectively. Figures A3a and A3b (in the Appendix) depict the inequality for $\alpha = 0.75$ and two different values of δ (0.07; 0.75). Note that the inequality will pivot so that the slope becomes positive. This leads to:

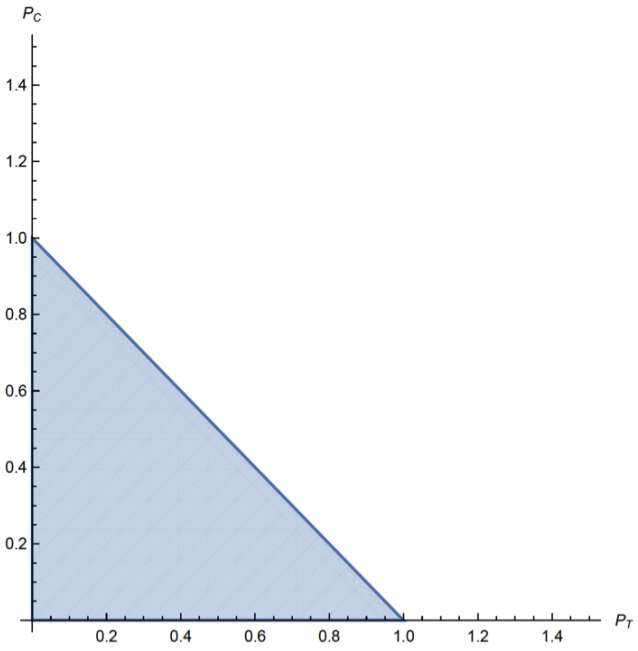

Figure 1: Inequality (4).

Result 3. For $\alpha > ½$, the slope of inequality (5) switches from negative to positive as δ rises. This changes the proportions of p_C and p_T for which TFT is fitter than always defect.

Finally, to compare the average fitness of the always defect and always cooperate strategies, consider equations (1) and (2). Always defect is fitter than always cooperate in an expression that simplifies to

$$(6)\quad p_C < \frac{\alpha}{1-\alpha} - p_T\frac{1-\alpha(1-\delta)}{1-\alpha}.$$

Figures A4a to A4d (in the Appendix) show inequality (6) for different values of α and δ.[14] Inequality (6) is always negatively sloped. For any α, the vertical intercept does not change with δ. However, the slope in inequality (6) becomes steeper as δ rises. Again, the shaded regions indicate the proportions of players in the three cultures such that always defect is fitter than always cooperate. This leads to

Result 4. The shaded regions, where both p_C and p_T are positive and always defect is fitter than always cooperate, becomes smaller as δ rises.

Our results suggest that whether a strategy (or, in our case, a rebel culture) is fitter than another depends on the *initial*

distribution of the three strategies in the population. Moreover, conditional on the value of α, changes in patience (δ) change the proportions of p_C and p_T (and therefore of p_D) required to support any one of the three cultures. In the next section, we analyze the three constraints that determine strategy success. This permits a three-way comparison to determine the fittest strategy for different values of α and δ. The main point will be that, irrespective of the value of the incentive to defect (α), an increase in patience makes the success of the TFT culture more likely. Potential policy outcomes are addressed in the section thereafter.

Attractors and basins of attraction

In this section, we focus on the dynamics of behavior change for different levels of patience, δ. In our model, depending on the initial distribution of the cultures among the population, one of the three strategies will evolve to be the fittest and the proportion of rebels who adopt that fittest strategy will increase, thus changing the underlying distribution of cultures in the population. This change in distribution has important repercussions for whether a rebel group will follow a path of defection and eventually splinter or not. We find that for high enough levels of patience, TFT may be an attractor. This, in turn, may lead to cohesive rebel groups. However, defection may also be an attractor, even when rebels have an extraordinarily high level of patience. In other words, the dynamics of the changes in the distribution of the strategy cultures depend on both the initial distribution of these cultures *and* on the patience of rebels.

We noted in the previous section that the relative fitness of the three strategies depends on δ. Proposition 1 below states how the regions bounded by inequalities (4), (5), and (6) change as δ changes. Thus, Proposition 1 delineates the basins of attraction. We then simulate the effect of a change in δ for two cases, namely, $\alpha < ½$ and $\alpha > ½$. This is done to illustrate the effect of a varying δ on the dynamics of changes in the proportion of rebels who will follow a particular culture.

Proposition 1. Inequality (4) is the locus of the point of intersection between inequalities (5) and (6).

Proof. Let p_C^* and p_T^* be the solutions for inequalities (5) and (6). Solving, we get the following values:

$$\left(p_T^*=\frac{2\alpha-1}{\alpha\delta}, p_C^*=\frac{\alpha\delta-2\alpha+1}{\alpha\delta}\right), \alpha\neq 1$$

and $$-\frac{1-\alpha}{1-\alpha+\alpha\delta}+\frac{-1+\alpha+\alpha\delta}{-1+\alpha}\neq 0$$

and $1-\alpha(1-\delta)\neq 0$.[15]

However, in the first of these expressions $(2\alpha-1)/(\alpha\delta) + (\alpha\delta-2\alpha+1)/(\alpha\delta) = 1$ so that adding p_C^* and p_T^* yields 1 and conforms to (4). This proves Proposition 1.

Corollary 1. The locus of the intersection of inequalities (5) and (6) tracks down inequality (4) as δ rises.

As p_T^* is negative for $\alpha < ½$ and falls as δ rises, p_T^* slides down (4) as δ rises. Further, p_C^* is always positive for $0 < \alpha, \delta < 1$ and falls as δ rises. Thus, p_C^* slides down (4) to the right as δ rises as well. Put differently, p_C^* and p_T^*, the locus of the intersection of (5) and (6), slide down (4) as δ rises.

Proposition 1 and Corollary 1 describe the changes in the basins of attraction as a function of α and δ. As indicated, in what follows we consider two cases, $\alpha < ½$ and $\alpha > ½$. For each, we show how an increase in δ makes the evolution of a TFT culture likelier, although not certain.

Case 1: $\alpha < ½$

Figures A5a and A5b represent inequalities (4), (5), and (6) for α=0. 25 and for δ=0.33 and 0.75, respectively. We identify three regions, A, B, and C. Region A is bounded by (4) and (6), B by (5) and (6), and C by (5) and the origin. TFT is the fittest culture in region A. Defect is the fittest culture in regions B and C. From (6), the horizontal intercept falls as δ rises while the vertical intercept remains unchanged. Inequality (4), of course, is independent of both α and δ. This implies that region A, where TFT is the fittest strategy, becomes larger as δ rises. Obviously, regions B and C become smaller as a result.

If the initial distribution of the population proportion of always cooperate and of TFT rebels lies in regions B or C, then the population proportion of the always defect culture will increase. Conversely, if the initial distribution of the population proportion lies in region A, then the TFT culture will prevail and the population proportion of the TFT culture will increase.[16] As δ rises, region A, the only region where TFT is fitter, will expand.[17] That is, as the patience parameter δ rises, the likelihood of cooperation, through TFT, increases. For example, say the initial distribution of cultures lies in region B. This implies that rebels are incentivized to choose the defect culture, with the result that the rebel group splinters. Now say patience, δ, rises from 0.33 to 0.75. The same distribution may now lie in region A because of the shift in inequality (6). Here, rebels are

incentivized to cooperate through the TFT culture. Thus, an increase in patience makes splintering less likely. Of course, the converse is also true. Nevertheless, and whatever the level of patience, if rebel culture distributions lie in regions B and C, splintering is inevitable.

Case 2: $\alpha > ½$

Figures A6a and A6b represent inequalities (4), (5), and (6) for α=0.6 and for δ=0.33 and 0.75, respectively. Once more, we identify three regions, in this case D, E, and F. The always defect strategy is fittest in region D. TFT is the fittest strategy in regions E and F.[18] These regions are illustrated in Figure A6b. where δ is 0.75. However, regions E and F are null sets when δ is 0.33 in Figure A6a since (5) and (6) no longer are binding constraints.[19] This increases the likelihood that cooperation, through TFT, will emerge in a society where δ is higher. For example, say the population distribution of rebel cultures lies in region E when δ is 0.75. Now if for some reason δ falls from 0.75 to 0.33, the same distribution of cultures will incentivize the defect culture and the rebels within the group will defect, thus splintering the rebel group. Thus, as in the previous case, a decrease in patience makes splintering more likely. Again, the converse is also true. Nevertheless, whatever the level of patience, splintering is inevitable if rebel culture distributions are in region D.

Discussion and conclusions

Our model suggests that both, the level of patience *and* the initial distribution of the population among the different cultures matter in determining the evolution of play.

Defection becomes more likely as patience, δ, decreases. That is, rebel groups are more likely to splinter if rebels become less patient and therefore more likely to defect. For example, say an exogenous shock (like an assault on rebel groups by the state) reduces rebels' time horizon for decisionmaking and thus lowers their discount rate. According to our model, rebel group splintering is expected to increase. This is a testable hypothesis.

We also note that the initial distribution of cultures among the rebel population matters. Thus, if this distribution lies in regions B, C, or D (across the Figure A5 and Figure A6 sets) rebels will defect, i.e., the rebel group will splinter regardless of whatever is the level of patience. In these scenarios, rebel group cohesion becomes impossible. As the consequences are observable, our model generates further testable hypotheses. For example, military actions that change the distribution of cultures in a population may explain the success of policies such as the Anbar Awakening, a policy adopted by the United States in Iraq in 2007. This policy strengthened local Iraqi Sunni's at the expense of foreign fighters. At that time, Iraqi Sunni forces coalesced against the violent depredations of Al Qaeda in Iraq (AQI). It is possible to argue that local Sunni's were more likely to cooperate with each other through a TFT mechanism because they lived in the country and had families, history, and a future in Iraq. The foreign AQI members had no long-term stake in Iraq and, as a consequence, were more likely to have a defect culture. As the U.S. policy continued, Iraqi Sunni's became relatively more numerous and this could have contributed to the change in behavior that led to the Anbar Awakening.

Whether rebels will splinter or not may thus be rooted in prevailing cultural norms. A purely militaristic approach, even if it is successful in separating TFT from defector rebels, as in the Anbar Awakening, therefore may not be sufficient to prevent the splintering of rebel movements into more violent offshoots. Political institutions that provide peaceful political change and economic institutions that reduce the need for appropriative political acts prevent splintering and violence and increase the bargaining space for negotiated settlements. Further, selective policing and targeting of rebel cultures might change the distribution of cultures itself. For example, if the initial distribution of rebels lies in region B or C of Figure A5a, we can expect splintering. Even if the initial distribution lies in region A, cooperation enforced through a trigger strategy is still possible. If the state selectively targets established groups who have the means to enforce cohesion through a TFT strategy, this might reduce the proportion of rebels belonging to this culture relative to the defect culture. Conversely, state action may also reduce the proportion of rebels adhering to the TFT strategy and therefore splinter a cohesive rebellion. Such splintering would increase policing costs for the state and may lead to state failure as rebel violence among different groups and with the state spreads and the prospects of a negotiated peace diminishes as it becomes harder to bargain with a hydra-like rebellion. In contrast, this sort of division may make it easier for the state to weaken the rebellion, more so if the rebellion can be localized. These lines of thinking suggest that modeling the state as a strategic agent interacting with different rebel cultures should be the next step in our theoretical model.[20]

This article closes a gap in the conflict literature by developing a model that captures evolutionary pathways for rebel group cohesion. The model provides testable hypotheses and carries policy implications subject to the existence of evidence for these hypotheses. We argue that rebels' patience as well as the initial proportion of rebels who adhere to a culture of cooperative behavior relative to others drive rebel group cohesion. Thus, violent suppression of rebellions, insofar as it reduces the patience of rebels, is likely to lead to the splintering

of rebel groups, more competition among them, and therefore to more violence. Conversely, targeting specific cultural traits, such as enhancing the ability of rebels to punish defectors by separating different types of rebels, may help build rebel cohesion. This may be more effective than violence at stamping out rebellions as it may be easier to negotiate with a cohesive group of rebels. That cohesive rebellions also leave more productive economic space further suggests that state failure due to economic collapse is less likely when rebel cultures are targeted. This, too, increases the chance of a negotiated peace by making prospects for economic prosperity a viable alternative.

Notes

1. Mapping website: See Crenshaw (2012). Other groups: Cigar (2011).

2. Produce political acts of rebellion: (U.S. Dept. of the Army, 2007, pp. 1–19). Leaving space for nonpolitical acts: Tullock (1974), Collier and Hoeffler (1998; 2002). Competitive pressure: Bloom (2005), Cunningham (2011), Cunningham, *et al*. (2012), Lilja (2012), Pearlman (2008/2009).

3. Standard evolutionary model: See, e.g., McElreath and Boyd (2007), Harrington (2009, pp. 521–529).

4. A strand: See, e.g., Grossman (1991), Collier, *et al*. (2003), Anderton and Carter (2009). Differs from: See, among others, Gurr (1968), Tellis, Szayna, and Winnefield (1997), Hegre, *et al*. (2001), Mousseau (2001), Fearon and Laitin (2003), Collier and Hoeffler (2004), Frey (2004), Herbst (2004), Basuchoudhary and Shughart (2010), Goldstone, *et al*. (2010).

5. Outbid: Bloom (2005), Pearlman (2008/2009), Cunningham (2011), Cunningham, Bakke, and Seymour (2012), Lilja (2012). Generational changes: Lawrence (2010). Government policies: Girardet (2011). One scholar: Bueno de Mesquita (2008). Other scholars: Kydd and Walter (2002). Existing divisions: See Christia (2008), Kalyvas (2006). Cohesive social bonds: Staniland (2012). Disagreement over strategy or tactic: Zirakzadeh (2002), Moghadam and Fishman (2010). Commitment problems: Bapat and Bond (2012).

6. Recent experimental studies: Duffy and Ochs (2009), Dal Bo and Frechette (2011). Closest to our approach: Vasin (2006).

7. The model is based on Basuchoudhary, Siemers, and Allen (2010).

8. For any value of α, the gains from cooperation exceed the payoff from any other combination of strategies. This payoff structure implicitly accommodates coordination costs (see Anderton and Carter, 2009, pp. 142–146).

9. Researchers have identified: Dal Bo and Frechette (2011). Another oft-used strategy is called Grim. This is equivalent to the TFT strategy when played against always cooperate or always defect: A rebel will choose to cooperate so long as the other player also cooperates. If the other player defects, however, then the rebel will defect forevermore.

10. For a textbook treatment, see Harrington (2009, pp. 521–529).

11. Equation (3) refers to the payoff from TFT, hence the subscript. To maintain a distinction, we use the subscript T for the *proportion* of TFT players and *TFT* for the *payoff*.

12. This is a binding constraint. The inequalities may have actual, but nonbinding, intercepts that exceed 1.

13. The horizontal intercept in Figures 2a and 2b becomes smaller as δ rises. Considering the vertical intercept in the figures, both the numerator and the denominator fall at the same rate α, as δ rises. However, the vertical intercept is greater or less than 1 only if $\alpha(1-\delta) <$ or $> 1-\alpha(1+\delta)$, respectively. Trivially, the vertical intercept is always less than one for α less than ½. Thus, (i) if both the numerator and the denominator fall at the same rate which is independent of δ and (ii) the denominator is always larger than the numerator when $\alpha <$ ½, then the vertical intercept term falls as δ rises.

14. Figures 4a and 4b show the effect of a change in δ (δ rises from 0.36 to 0.75) when $\alpha <$ ½ (in particular, $\alpha = 0.33$), i.e., Stag Hunt. Figures 4c and 4d show the effect of the same change in δ when $\alpha >$ ½ (in particular, $\alpha = 0.7$), i.e., Prisoners' Dilemma.

15. Note that the conditions for getting an internal solution do not violate our assumptions that $\alpha, \delta \in (0,1)$.

16. Figures 1 through 4 in the prior section define these areas.

17. Proposition 1 and Corollary 1 ensure this.

18. Figures 1 through 4 in the prior section define these areas.

19. Proposition 1 and Corollary 1 ensure that regions E and F become smaller and ultimately disappear as δ rises when $\alpha >$ ½.

20. Increase the bargaining space: See Hirshleifer (1995).

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Appendix: Figures A2, A3, A4, A5, and A6

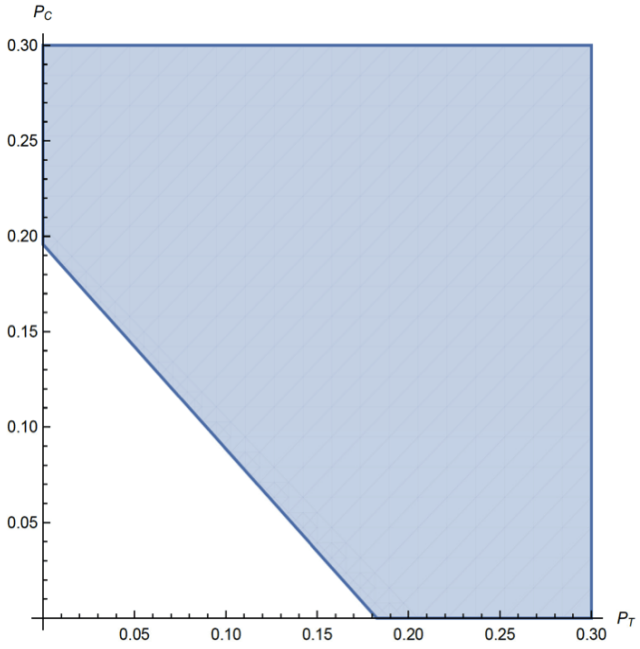

Figure A2, Panel (a): Inequality 5, α=0.2, δ=0.27.

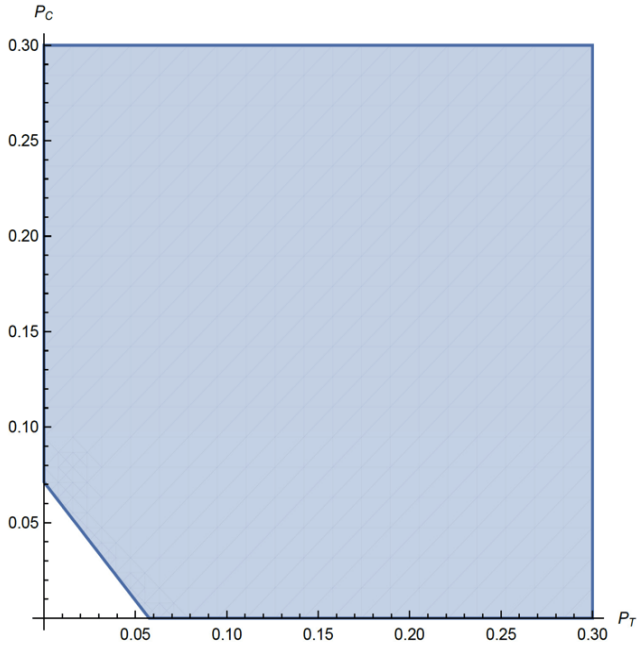

Figure A2, Panel (b): Inequality 5, α=0.2, δ=0.77.

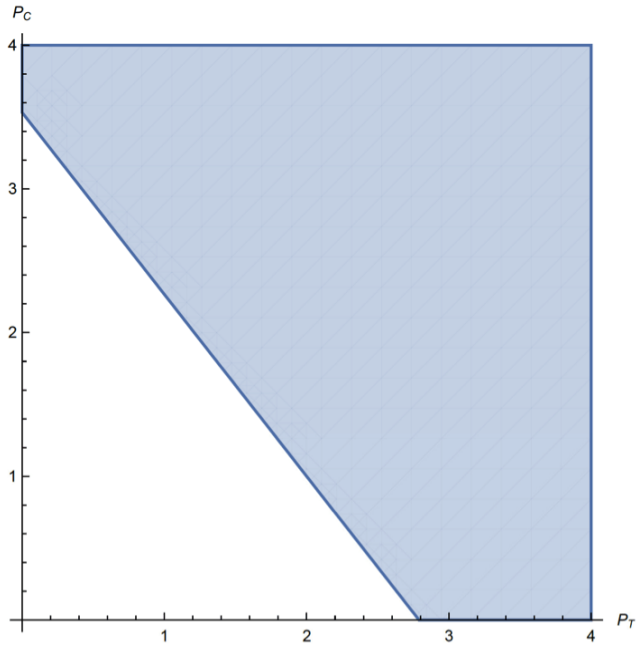

Figure A3, Panel (a): Inequality 5, α=0.75, δ=0.07.

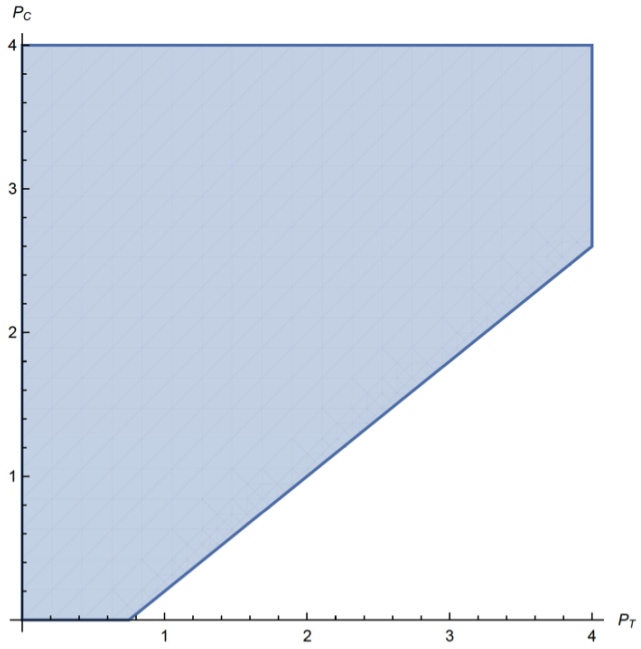

Figure A3, Panel (b): Inequality 5, α=0.75, δ=0.75.

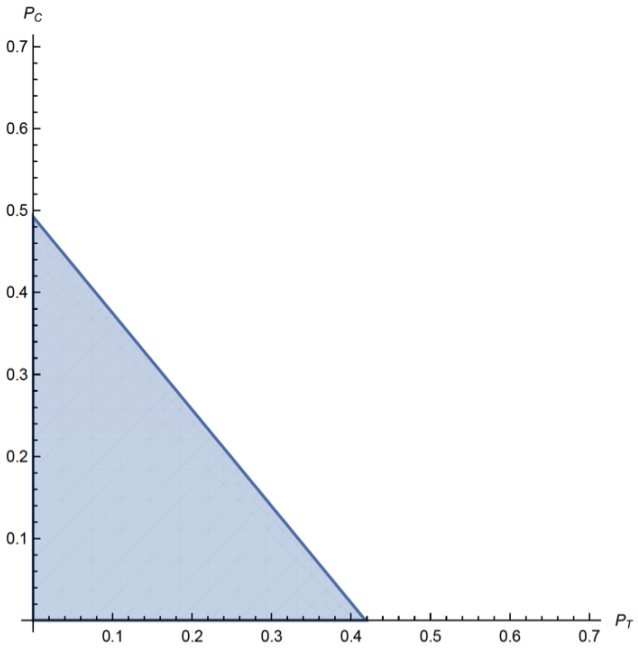

Figure A4, Panel (a): Inequality 6, α=0.33 and δ=0.36.

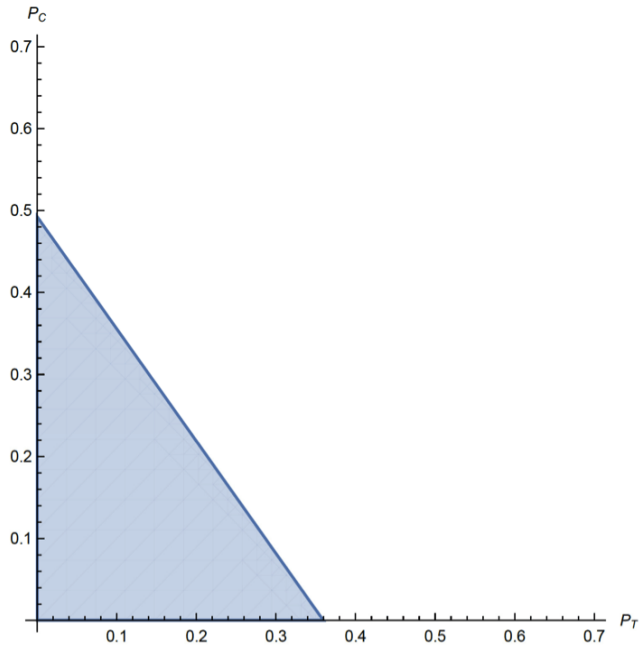

Figure A4, Panel (b): Inequality 6, α=0.33 and δ=0.75.

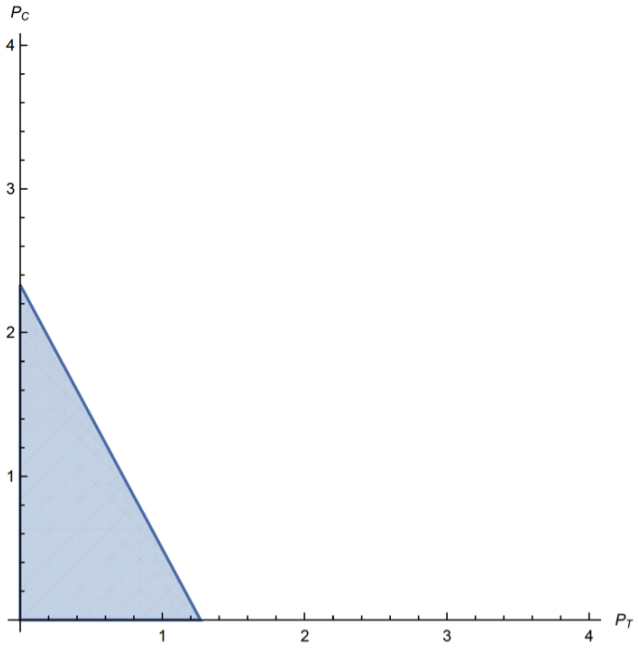

Figure A4, Panel (c): Inequality 6, α=0.7 and δ=0.36.

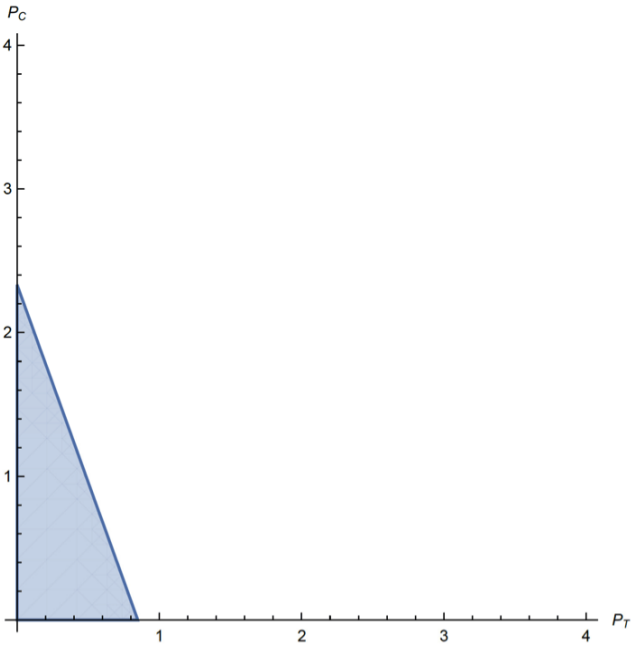

Figure A4, Panel (d): Inequality 6, α=0.7 and δ=0.75.

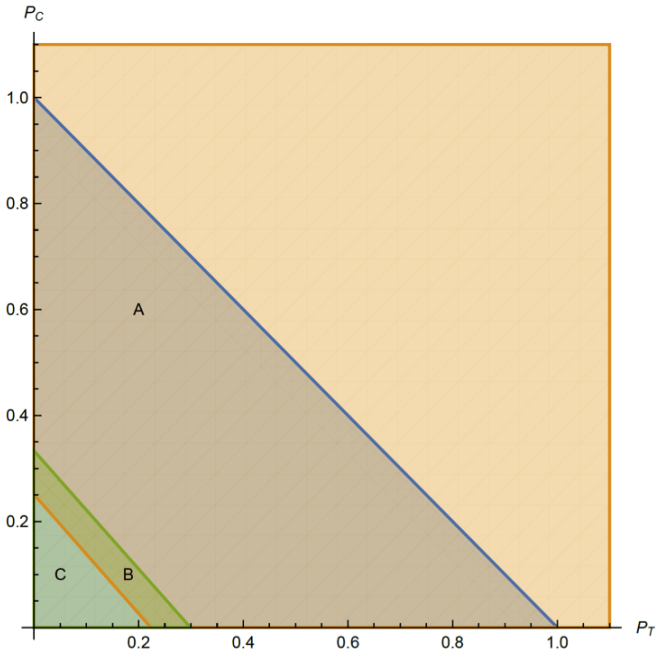

Figure A5, Panel (a): Inequalities 4, 5, and 6 with α=0.25 and δ=0.33.

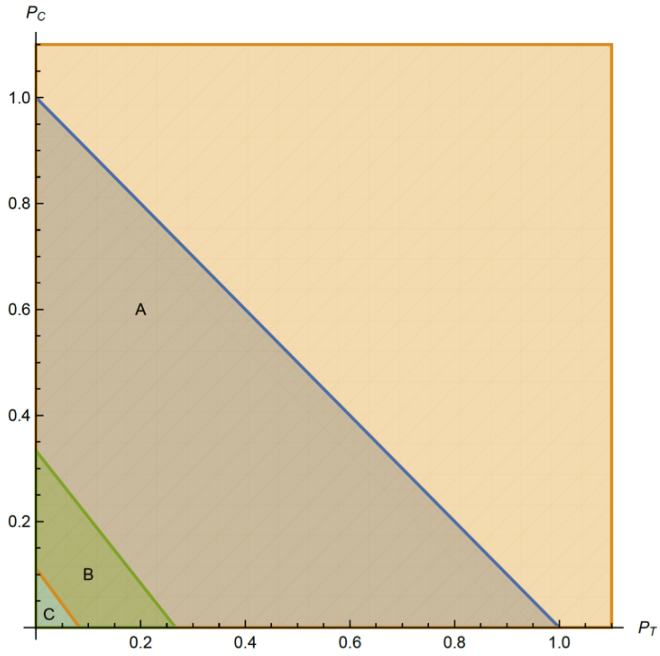

Figure A5, Panel (b): Inequalities 4, 5, and 6 with α=0.25 and δ=0.75.

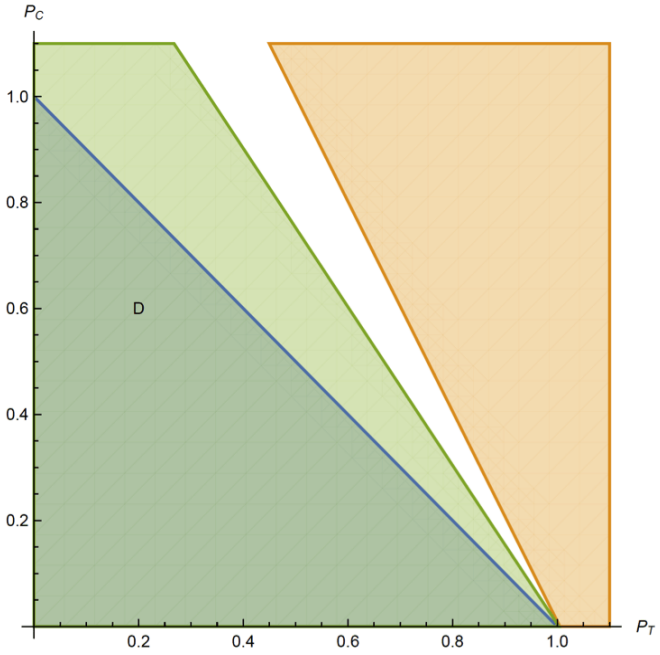

Figure A6, Panel (c): Inequalities 4, 5, and 6 with α=0.6 and δ=0.33.

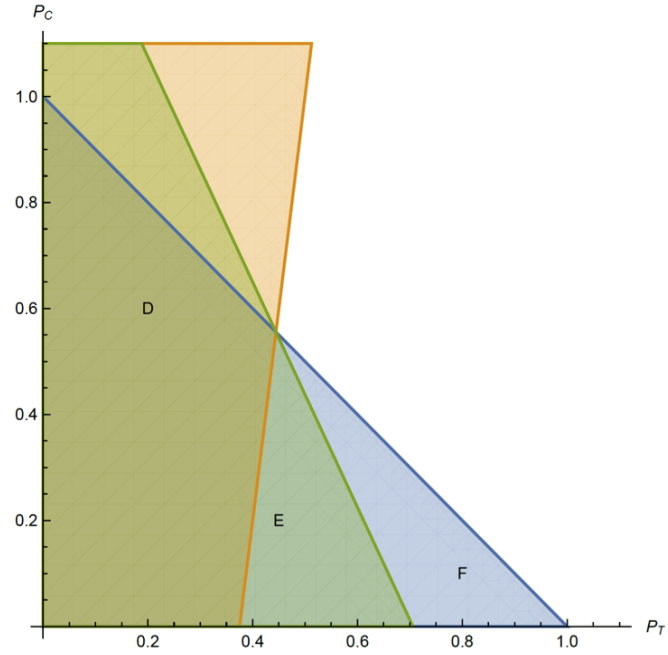

Figure A6, Panel (d): Inequalities 4, 5, and 6 with α=0.6 and δ=0.75.

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Symposium: Governance in and after violent conflict

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Anke Hoeffler on interpersonal violence

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Garrett Wood on weapons improvisation and bargaining failure

Atin Basuchoudhary and **Laura Razzolini** on splintering and cohesion of rebel groups