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From green to ripe: Dynamics of peacemaking in Colombia (1998–2016)

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Abstract

Armed conflict in Colombia with the Revolutionary Armed Forces of Colombia (FARC-EP) was only settled after 50 years and several attempts at negotiations. This sequence of events fits the pattern of “conflict ripeness” first proposed by William Zartman. But using a successful settlement as a way to determine ripeness can be tautological. To address this issue, we develop a formal model to identify the level of ripeness at which a conflict is settled. In an overripe conflict both parties end up spending resources in a military build-up that is out of proportion with what they obtain in the final settlement. We show that such overripeness is exacerbated by the access to resources and by the factional heterogeneity within the two sides. We illustrate these dynamics by looking in detail at the attempts at negotiation between Colombia’s government and the FARC-EP. To that end, we combine statistical data, some previously undisclosed, and interviews with some key participants.

Keywords
Colombian armed conflict, conflict ripeness moment, FARC-EP, peacemaking
Introduction

The endurance of Colombia’s armed civil conflict is a true anomaly in the history of armed insurgencies. The FARC-EP (the Spanish acronym for Revolutionary Armed Forces of Colombia—People’s Army) were officially founded in 1964 although the armed nuclei that gave it form existed already in the 1950s. It only reached a peace agreement with the government in 2016.¹ (Villamizar, 2017) Few other conflicts in the world, none in Latin America, come even close in terms of duration.

The final settlement was the product of a lengthy process but even this understates how intractable the conflict had been up to that point. (Krujit et al., 2019) Before the Havana Accords that brought the conflict to an end there had already been two major failed attempts at a negotiated settlement, one in 1983 another in 1999, and some minor episodes that did not even get off ground. This pattern is, of course, not exclusive to Colombia. Many conflicts in the world go through similar cycles of failed negotiations, enough to have spanned a literature of its own. Beginning with the work of Touval and Zartman (1985), there has been a growing scholarship trying to find out what makes conflicts “ripe” for resolution.

This has proven quite difficult because, as Kleiboer (1994); Pruitt (2005); O’Kane (2006) and Amer (2007) have pointed out, arguments based on conflict ripeness can easily become tautological. To turn ripeness into an operational concept, we need to base it on something else apart from the successful settlement. In this paper we propose a rational-choice approach that can address this difficulty and use the case of Colombia to validate it.

In rationalist models of conflict, private information is a major trigger of war. Agents escalate hostilities trying to ascertain the true cost of conflict for the opponent (Abreu and Gul, 2000; Fearon, 1995). Another approach to conflict duration looks at the veto players within each of the camps (Cunningham, 2006; Rudloff and Findley, 2016; Thyne, 2012). In this view, the discrepancies within each side make an agreement more difficult so that civil wars in which both sides have several veto players tend to last longer than others. This approach has the advantage with respect to the asymmetric information argument of offering an explanation for why wars can become much longer than what the initial stakes and military capabilities might suggest. Furthermore, recent scholarship on civil wars has shown that access to resources is a key variable in explaining the duration of conflicts (Fearon, 2004; Hegre, 2004). The formal model developed below combines these insights so that resources, together with intra-party heterogeneity, are the main drivers of overinvestment in military, and hence, overripeness of conflict.

In a conflict with asymmetric information and plural agents it is possible to have situations of, as it were, “overripeness,” that is, situations in which
the war keeps escalating beyond what the pivotal actors within each side would have chosen on their own. Crucially, this escalation is not driven by any special veto power of hawkish factions. In fact, in our formal derivation vetoes do not play any role in general (they may arise in limiting cases). Instead, what drives these escalations is that hawkish factions provide a “public good” to dovish ones: by allowing a military build-up to the liking of the hardliners, the softliners improve their own prospects in a negotiation.

Thus, instead of having to determine whether a conflict is ripe solely on the basis of whether it was solved, we can turn ripeness into a matter of degree that can be evaluated by looking at the nature of the settlement itself. In an overripe conflict, once an agreement is reached, it will be significantly below the maximal aspirations both parties had expressed in the run-up to the negotiations. The larger the gap between what they both wanted and what they both obtained, the more evidence we have that the war had gone for longer than what was purely dictated by the parties’ preferences and capabilities and was, instead, fueled by an attempt at projecting strength before settling. By the same token, we can tell ex ante when a conflict is more susceptible of becoming “overripe.” Conflicts in which there is significant heterogeneity within the two sides, and in which both have abundant access to external resources, are likely to fall into the dynamic just described: long duration followed by a settlement that gives both parties much less than what their most ambitious factions wanted.

Although our theoretical framework is general enough to accommodate several instances of conflict, instead of conducting a comparative analysis of different civil wars, here we shall illustrate its main points through a detailed study of one case: Colombia. While there are advantages in testing a theory by means of a wide variety of cases, the close description of a single case allows us to ascertain the mechanisms at work in ways that a statistical analysis would obscure. These alternative empirical strategies are not competitors but rather support each other.

Colombia is a good case to elicit the mechanisms described by our theoretical approach both because of how lengthy the war was and because of the several attempts at negotiations. On the basis of our model we shall argue, and support with the evidence available, that both the FARC-EP and the Colombian state, largely driven by their respective hardline factions, tried since the late 90s a “peace through strength” strategy that was meant to strengthen their military so as to force the opponent to accept harsh conditions in a negotiation. But this approach ran into several limits and by the mid 2010’s the factions more open to negotiation in both sides saw an opportunity to reassert themselves in ways they could not before, thus paving the way for the 2016 settlement. It is telling that the final settlement involved concessions from both sides that would have been unthinkable just
two years before. The final outcome was far removed from the maximalist agenda that hardliners in both sides would have preferred indicating that the military build-up that preceded it responded to the logic dictated by those same hardliners while being strategically supported by the moderates. Reinforcing this conclusion, disagreements between members of what used to be the government coalition about the peace process and its aftermath have erupted openly, thus creating new obstacles to the definitive termination of the conflict.

We have confined ourselves to the time period covered between 1998 and 2016, less than half of the FARC-EP’s lifespan. Space considerations keep us from discussing the entire historical arch of the FARC-EP. Also, the data available is much more detailed for the period under study. While confident that our main conclusions about the forces driving the cycles of negotiation retain much of their validity (maybe even more) for the preceding stages, we prefer to substantiate our views with data much more precise and reliable than what is available for earlier periods. To substantiate our views, we rely on new empirical material from two types of sources: a database that has not been made before accessible to the public (Observatorio de Derechos Humanos y Derecho Internacional Humanitario (ODHDIH), n.d.) and interviews with some key protagonists. At base, though, our analysis is qualitative. It makes use, when possible, of quantifiable variables, but its ultimate goal is to ascertain what remains, of necessity, a qualitative property of conflicts: their degree of ripeness. Since one of our main claims is that ripeness can be turned into a concept that admits gradations (hence our insistence on “overripeness”), as a long-term goal ripeness could become itself quantifiable. But at the current stage, we settle for the more modest goal of getting the conceptual underpinnings right.

The rest of the paper is organized as follows. Section 2 presents a brief overview of the literature both on Colombia’s conflict and on the concept of conflict ripeness as it has been introduced in the qualitative literature. Section 3 describes the main aspects of the formal model and its key results (with the analysis and proofs relegated to Appendix A). Section 4 describes our empirical methodology and the sources employed. Section 5 offers a detailed analysis of the trajectory of Colombia’s conflict during the period under study applying the concepts already developed. Section 6 summarizes and concludes.

**Literature review**

The scholarship on conflict duration, focusing on the timing, and stages of settlement, has already a long tradition. (Douglas, 1957; Druckham, 1986; Harto de Vera, 2004; Pruitt, 2005). The key in this line of analysis is to
identify the right time to negotiate. From the pioneering work of Touval and Zartman (1985), some studies postulate that a conflict is only ripe for a possible resolution once it is perceived as mutually unsatisfactory for the parties involved (Dell’Aguzzo, 2018; Frank, 2015; Schiff, 2017; Zartman, 2015). In any case, and according to Kriesberg (1991) this depends on the concurrence of factors such as power relations, the level of possible exchanges, the degree of internal cohesion and conviction or the factors that come from the international context.

In the words of Fisas (2004: 192), a conflict is ripe when it has reached “a stage in which it is possible to attain a change in both parties’ mentality so that, instead of seeking victory, they now pursue conciliation.” Touval and Zartman (1985), in work developed later by Zartman (1993, 2001, 2009), characterize this ripe stage of a conflict as a “mutually hurting stalemate,” a description closely related to that suggested by authors such as Mitchell (1995, 2011) or Crocker (1992) of an “enticing opportunity” or by Pizarro (2017) of a “mutually negative tie” (Ríos, 2018).

Thus, when one of the actors is clearly in the position of an eventual victory, or when all the actors have before them possibilities of accumulation and growth, it is difficult to speak about ripeness. According to Zartman (1993, 2009, 2015), ripeness opens the doors to an eventual negotiation so that the parts progressively move toward a meeting point (Connolly and Doyle, 2015; Marsh, 2001; Ramsbotham and Schiff, 2018; Salla, 1997).

This brings to the theory of conflict resolution a component of rationality that has been widely acknowledged in the peace research (Raiffa, 1982; Terris and Maoz, 2005). This notion of maturity, according to Miall et al. (2015), jives with the Harvard School win/win model, where ripeness implies a mutual gain absent in any other scenario.

Conflict ripeness, however, is a concept inherently difficult to operationalize (e.g Harto de Vera, 2004; Urlacher, 2011) because it depends on the prospects of both military victory and political settlement as perceived by the parties involved. Thus, it involves a subjective component best elicited by paying attention to other aspects beyond the purely military such as, for instance, the parties’ discourse, their interpretive frames and their justifications for violence. Along these lines, Ungerleider (2012); Frank (2015) and Jit et al. (2016) argue that conflict ripeness also involves symbolic factors such as the power relations between the rival camps and their acceptability among society at large.

Given its lifespan of more than five decades, Colombia’s conflict has given rise to an abundant literature trying to explain this remarkable obstinacy. There are many explanations to choose from. After the work of Collier and Hoeffler (2001) popularized the “greed-grievance” dichotomy, a strand of theorizing emerged that emphasized the role of resources in fueling the
conflict. According to this view, what kept the FARC-EP active for so long was its access to abundant resources, especially from the coca trade (Montenegro and Posada, 2001). But throughout its existence, the FARC-EP retained a highly cohesive chain of command, willing to spend much of those abundant resources in fighting a superior army all over the country’s territory, something a purely money-making concern would not have done.

A growing set of scholarly contributions has focused on the local dynamics that keep the insurgency going, with special attention on its ability to form and maintain “rebelocracies” in parts of the country where the state’s institutional weaknesses are patently manifest (Arjona, 2008, 2016; Lessing, 2020). The nuances brought out by this line of research have certainly increased our understanding of the conflict, especially at the ground level. But the past few years show that, regional differences notwithstanding, the FARC-EP never ceased to be an organization capable of nation-wide planning. For all the roadblocks and relatively mild problems of compliance, once the central leadership of the FARC-EP decided to end the armed confrontation, it was able to impart this new line to its units. It is to the study of this process of conflict termination that we now turn.

Description of the model

To formalize the intuitions guiding the paper, we develop a game-theoretic model of bargaining and conflict under imperfect information. In the interest of brevity, here we present the model’s basic elements and the main results. The details and proofs can be found in Appendix A.

The game consists of $N + M$ players, $N$ of them forming a group $S$ (the “state”) and the remaining $M$ a group $I$ (the “insurgency”). When needed, subscripts $k$ and $m$ will be used to denote individual members of group $S$ and $I$, respectively. Both groups compete over a prize and have to decide how many resources to spend in a military build-up that may be used down the road in case a peaceful settlement fails. They both have a budget of, respectively, $y_S$ and $y_I$ from which they choose the shares $0 \leq \tau_S, \tau_I \leq 1$ they will spend. Since we will be interested in how changes in the access to resources change the strategies of the different actors, let’s assume that the rate of conversion of resources from the budget into military expenditure is governed by a parameter $c$. As $c$ increases, the parties are more effective in transforming their budget into actual firepower. In case of conflict, the prize will go to whoever prevails, where the probability of victory of each side depends on the relative amount of resources spent:

$$p_S(\tau_S, \tau_I) = \frac{H(\tau_Scy_S)}{H(\tau_Scy_S) + H(\tau_Icy_I)},$$
where \( H \) is an increasing and concave contest function (Skaperdas, 1996).

Although the two parties have the option of reaching an agreement, exogenous factors may lead them to fail. Experience shows that even under the best of circumstances, conversations may break down. A bomb may go off at the wrong moment or (as happened in Colombia in 1992), a hostage taken by another group may die in captivity, and the entire process may be aborted. So, in our model we introduce a slight element of chance during the negotiations.

The game consists of the following stages:

- **Stage 1**: Both \( S \) and \( I \) choose \( k \).
- **Stage 2**: Both \( S \) and \( I \) choose simultaneously offers for a settlement \( x_S \) and \( X_I \). If \( x_S + X_I \leq 1 - \epsilon \), where \( \epsilon \) is a random variable uniformly distributed on \([0, 1]\), the game ends, each party receives its corresponding \( x \). Otherwise, the game moves to Stage 3.
- **Stage 3**: The prize is allocated according to the rule of the contest function.

Within each group, players differ in terms of their preferences over the prize. For a given player \( k \in S \), the prize has value \( \pi_k \geq 0 \) compared to the value of the resources \( y_S \). Intuitively, \( \pi \) represents how “hawkish” an agent is; agents with a high value of \( \pi \) are willing to sacrifice vast amounts of \( y \) for the sake of military victory.

To formalize the notion that each group makes its choices based on the preferences of its different members, we introduce for each agent a parameter \( \omega \) that represents the weight each member has in the final decision. A group’s choice is a weighted average of the strategies preferred by each of its members. So, an increase in \( \omega_k \) means that agent \( k \)’s influence within \( S \) increases.

The parameters \( \pi \) are imperfect information. They are known among the members of the same group, but not across groups. So, from the point of view of players in \( I \), the parameters \( \pi_k \) are independent draws from a distribution \( F_S \) and, conversely, from the point of view of players in \( S \), \( \pi_m \) are drawn from distribution \( F_I \).

The preceding setup is meant to represent a conflict in which both the state and the insurgency know that their opponent is made up of several factions that disagree on how to weight the costs and benefits of military victory compared to a political settlement. But neither can be sure of the exact factional composition of the opponent. The formal analysis carried out in the appendix establishes the following results that are important for our purposes:
“Overinvestment” in military strength: Given the uncertainty about each other’s capabilities, both the state and the insurgency tend to invest more in their own military than would be strictly necessary to secure the goals they want to attain in the negotiation process. In the internal decision-making of each party hawkish factions provide, as it were, a “public good” for the dovish ones. In terms of the model, there will be players with a “low” $\pi$ (“dovish”) that have incentives to choose the levels of military expenditure $\tau$ favored by the most hawkish ones as a way of obtaining a more favorable position at the negotiation stage.

As a corollary, in the face of heterogeneous preferences within each camp, the levels of military build-up are likely to continue for a while beyond the point at which the conflict could have been settled. Since both sides tend to overinvest in their military, by the time the moderate factions are able to push for a settlement, the confrontation has gone on for longer (and has costed more) than what these factions would have decided on their own.

The effect of factional heterogeneity: All else equal, more heterogeneous groups will be more prone to overinvestment, that is, the wider the discrepancy between the different factions, represented formally by the variance of $F_l$ and $F_s$, the more likely it is that the intermediate factions will support a military build-up. Intuitively, intermediate factions offset the “damage” dovish factions do to their bargaining position by supporting the hawkish ones in their attempt at projecting an image of strength.

The effect of decision rules: Just as increased variance increases overinvestment, decision rules that give more weight to the factions with high value $\pi$ will lead to the same result.

External resources: The lower the cost of the military build-up represented by $c$, the higher the degree of overinvestment. The intuition is rather straightforward: as resources become more available, every faction, regardless of its preferences, is more willing to spend in military readiness.

In what follows, we shall see that the dynamics of conflict resolution in Colombia bears out these conclusions. To see this, we shall look in detail at the trajectory of the conflict and the efforts at peace-making (or lack thereof) focusing on the interplay between military and political factors to ascertain how the factional differences within the state and the FARC-EP led to the military escalation and subsequent settlement of the conflict.

Methodology

To substantiate our analysis of the process, we shall rely on two types of information: quantitative information about the relative military strength of the state and the insurgency, and qualitative information elicited from direct
interviews with key actors. Combining these two sources we can turn the concept of “conflict ripeness” into an analytical tool based on the actors’ perceptions and strategies that allows us to understand the failure and success of the different efforts at conflict resolution.

As regards the quantitative information, we will use a database to which we were granted exclusive access compiled by the Observatorio de Derechos Humanos y Derecho Internacional Humanitario, an agency that at that point was attached to the Vice-Presidency of the Republic and tasked with monitoring the situation of human rights and international humanitarian law. This database brings together reports contained in the Daily Briefings of the Administrative Department of Security (known by its Spanish acronym DAS) for the period 1998–2010 and, once this Department was dissolved, information from the Central Command of the Armed Forces for the period 2011–2015. From this sources we can obtain indicators about the military capabilities of both the state’s army and the insurgency (such as the number of armed operations initiated by each of them, number of kidnappings perpetrated by the guerrilla and number of recruits), their geographical spread (number of municipalities in which each of them, or both, were active) and their access to financial resources although, of course, that information is much more precise in the case of the state where it can be validated by the national budget.

To understand how the two camps perceived the trajectory of the conflict, we rely on interviews conducted in Bogota between 2015 and 2019. As representatives of the state, we interviewed: former President Álvaro Uribe and former High Commissioner for Peace Víctor G. Ricardo (during the Pastrana Administration) and Sergio Jaramillo (during the Santos Administration). To get the perspective from the FARC-EP we were able to interview three former combatants that attained a high profile: Elda Neyis Mosquera (alias “Karina”), Daniel Sierra Martínez (alias “Samir”) and a former member of the FARC-EP’s Central Command that requested anonymity.


Background

The last two decades of the armed conflict with the FARC-EP lend themselves to a very clear division into three distinct stages: the failed peace process of El Caguán that largely overlaps with the Pastrana Administration (1998–2002), the all-out war offensive launched during the two Uribe Administrations (2002–2010) and continued into the first years of the first
Santos Administration, and the successful peace process that, after some secret conversations, entered its public phase in 2012 and culminated in the signature of the Havana Accords in 2016. In what follows we shall analyze them in detail.

A full discussion of what came before exceeds the space limitations of the current paper, but a few remarks are in order to place the events discussed in context. In 1991, Colombia gave itself a new constitution, drafted by a Constitutional Assembly. That body was intended, among several other very important things, as a mechanism to bring an end to the country’s armed conflict. In fact, some insurgencies demobilized and took part in it. But the negotiations with the FARC-EP, for reasons too complex to describe here, failed, bringing renewed intensity to the war with that organization. After that, there was only a haphazard attempt at negotiation in the Mexican city of Tlaxcala, that quickly fell apart. The Gaviria Administration was quite explicit in its belief that, after the fall of the Berlin Wall the FARC-EP were on their way to extinction with or without dialog. Whatever the grounds for that forecast at that time, later events proved it wrong. In fact, the decade of the 90s marks the era of the FARC-EP’s fastest growth and by 1997 it was able to inflict serious defeats on the state’s army in open-field battles.

During those very years, the government of Ernesto Samper (1994–1998), of a center-left ideological bent, had shown itself willing to go further than previous governments in an agenda of social and economic reforms. But it was from early on hamstrung by a serious scandal due to the flow of money from the Cali Cartel into the electoral campaign. This meant a serious breakdown in the government’s relationships with opposition parties and even significant tension with the military (Illera and Ruiz, 2018).

This is the context in which the Pastrana Administration came to power in 1998 with a two-pronged strategy. It launched the peace process known as the El Caguán talks and, at the same time, it sought and obtained an aid package from the United States called Plan Colombia with the purpose of beefing up the military’s operational capacity (Garay, 2001; Molano, 2001).

Table 1 presents data that puts into sharper focus the security and military consequences of the process. We shall make repeated reference to it as it helps us track quantitatively the evolution of Colombia’s conflict over the past two decades.

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This period can be aptly described as one of a “mutually reinforcing tie” in which both sides saw the prevailing balance of power as an incentive to
Table 1. Data on violence, security, and defense (1998–2012).

<table>
<thead>
<tr>
<th>Year (A)</th>
<th>FARC-EP operations (B)</th>
<th>Army operations (C)</th>
<th>Municipalities FARC-EP presence (D)</th>
<th>Military spending (% of GDP) (E)</th>
<th>Security forces personnel (F)</th>
<th>Kidnappings (G)</th>
<th>Air force flight hours (H)</th>
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<tr>
<td>1998</td>
<td>356</td>
<td>201</td>
<td>186</td>
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<td>256,167</td>
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<td>343</td>
<td>244</td>
<td>194</td>
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<td>710</td>
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<tr>
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<td>415</td>
<td>352</td>
<td>208</td>
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<td>725</td>
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<td>840</td>
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<td>4.3</td>
<td>307,703</td>
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<td>313</td>
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<td>654</td>
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<tr>
<td>2004</td>
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<td>362,563</td>
<td>299</td>
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<td>1968</td>
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<td>414</td>
<td>2151</td>
<td>152</td>
<td>4.5</td>
<td>404,898</td>
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<td>2008</td>
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<td>2009</td>
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<td>164</td>
<td>5.1</td>
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<tr>
<td>2010</td>
<td>724</td>
<td>1439</td>
<td>166</td>
<td>4.5</td>
<td>437,955</td>
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<tr>
<td>2011</td>
<td>669</td>
<td>693</td>
<td>180</td>
<td>4.2</td>
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<td>77</td>
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<tr>
<td>2012</td>
<td>824</td>
<td>744</td>
<td>190</td>
<td>4.2</td>
<td>431,900</td>
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<td></td>
</tr>
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</table>

acquire more military capabilities and escalate the confrontation. The process collapsed because, once it got bogged down, both the state and the FARC-EP used the time of the conversations as a respite to replenish their firepower.

Although at the time, critics saw the Pastrana Administration’s decision to engage in peace talks as an exercise in free-wheeling dovishness, a closer look presents a much more nuanced picture. The government did, in fact, take bold measures to jump-start the peace process, chief among them the decision to demilitarize five municipalities including El Caguán and the adoption of an overly ambitious agenda of 12 sections and 48 subsections. The political atmosphere was largely favorable to some kind of peace process Chernick (2012). In the presidential election of 1998 the two main candidates, both Andrés Pastrana, the eventual winner, and Horacio Serpa ran on a peace platform. By opening negotiations, far from taking an unusually bold step, the Pastrana Administration was reflecting a widely held consensus.

But that eagerness to negotiate did not translate into a willingness to make final status concessions. In fact, in later years former President Pastrana himself emerged as a critic of the peace process of the Santos Administration which he considered to be exceedingly generous with the insurgency. The center of gravity within the governing coalition shifted as the Pastrana Administration marked the return to power of the center-right with ideological positions more adverse than those of the Samper Administration to the kind of reforms that could conceivably attract moderates within the FARC-EP.

These changes in the political tide meant that, in terms of our model, this was a time in which the \( \pi \) value of the pivotal factions of the state went up. The state was now more willing to engage in military confrontation even while the peace talks were launched to great fanfare. At the same time, another important variable of our model, \( c \), the availability of resources for war, was also increasing as the growth of paramilitary militias, active since the 1980s, reached new heights. Private armies, financed by abundant inflows of drug money, could now wage a massive counterinsurgency campaign on their own and experienced a quantum leap around this time, first in 1994 with the creation of the Autodefensas Campesinas de Córdoba y Urabá (ACCU) and then, since September 1997, with the creation of the Autodefensas Unidas de Colombia (ACU), both led by the Castaño brothers (Ronderos, 2014). Whatever the intentions of key office holders (some were opposed to such vigilantism, others not so much), these paramilitary organizations buttressed the political position of those sectors opposed to any settlement with the insurgency.

Additionally, the military aid coming through Plan Colombia represented a significant injection of resources for the government. This package, that came against the backdrop of increased American presence in the region as
a result of the September 11 attacks (Cairo, 2018), had as ostensible goals improving drug interdiction and law enforcement capabilities, with a nod to the development of alternatives to coca crops in the most affected areas (Otero, 2009: 197). But it was clear to everyone involved that the broader context for such goals was the war against the FARC-EP.

Plan Colombia brought about important changes in the operations of Colombia’s security forces. It introduced a doctrine of joint operations between the police and the army, and made possible the creation of such key units as the Joint Command of the Caribbean and the Southern Joint Task Force, the Rapid Deployment Forces (known by their Spanish acronym FUDRA), 12 mobile brigades and more than 14 mobile squadrons (DNP, 2006: 12). Several military bases were either built or revamped, some of them in areas that had been traditional strongholds of the FARC-EP.

These two changes, a hardening of the political stance and an improved access to resources for war-making, were mirrored within the FARC-EP. The end of the Medellin Cartel (1993) and the Cali Cartel (1996) gave the guerrilla a freer hand in consolidating its clout in the coca-growing areas (Henderson, 2012). Turnover in leadership also contributed. In 1990 Jacobo Arenas, one of the group’s founding fathers and a vocal critic of the guerrilla’s involvement with the coca trade, died and two new leaders joined the Secretariat, the highest decision-making body of the FARC-EP: Roberto Briceño (alias “Mono Jojoy”) and Luis Edgar Devia (alias “Raúl Reyes”). They were the heads of two of the most powerful military structures of the FARC-EP, the Eastern and the Southern Blocs respectively, both of them operating in areas with abundant coca crops and able to inflict major defeats on the state’s army in open combat (Echandía, 2000; Pécaut, 2006).

Given these circumstances, both parties used the time bought during the negotiations to strengthen their own military position with the goal of achieving the final victory (Ríos, 2018). Table 1 shows a marked increase in several indicators of violence such as armed incursions initiated by the FARC-EP and kidnappings between 1998 and 2001, while peace talks were going on. Same with the FARC-EP’s geographical presence (Figure 1). Likewise, the indicators of government’s offensive posture also grew including the defense and security expenditure as a share of GDP, armed operations against the FARC-EP and airflight hours both by the Army and the Police.

While the format of the Caguán process was, to be sure, unwieldy and at the time many critics blamed this for the lack of progress and ultimate failure of the peace process, the data point to a deeper structural difficulty: neither the government nor the FARC-EP were ready to make peace. The conflict had not yet reached its ripe stage. In both camps the political leadership had become more reluctant to a grand bargain (higher $\pi$) and procuring
military resources became much easier (higher $c$), be it through the drug trade in the case of the FARC-EP or through American aid in the case of the government. Consistent with our theoretical framework, these conditions meant that the conversations were unlikely to succeed. As former Peace Commissioner Víctor G. Ricardo acknowledged, the state approached the talks as a necessary breather to give the military a respite.

If you ask me “Was this the most propitious moment for a negotiation?” I would say that, from a military point of view, it was not for the FARC-EP but it was crucial for the state. The state needed this breather otherwise they would have seized power. ( . . . ) The FARC-EP were convinced that they were going to seize power. (Personal interview, June 2019, Bogota)

Likewise, former FARC-EP militant “Karina” recalls how the FARC-EP approached the conversations from what they regarded as a position of force. They saw the ultimate seizure of power as within reach and thought that there was no need for major concessions (Personal interview, May 2015):

Around 1998 we in the FARC-EP were still thinking about seizing power through arms. The Secretariat was fully aware of that. In fact, when we sat down with

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**Figure 1.** Geographical presence of the FARC-EP and distribution of military operations, 2002.
Source: ODHDIH (n.d.).
Pastrana in El Caguán we were close to the final push. (…) We said that there was not point in negotiating anything. That this was just a dialogue since we were in a position of force.

As a result, during the peace talks violence escalated notoriously throughout the country. Between 1998 and 2002 there were 17,818 infractions against International Humanitarian Law and 17,043 Human Rights violations. Political violence claimed 18,595 lives while there were 14,342 casualties in combat (Otero, 2009: 14). The number of internally displaced people reached the highest levels in Colombia history: during that same period there are a total of 729,928 forcible displacements (CODHES, 2011: 18). This was the context in which Álvaro Uribe won the presidency in the 2002 elections.

The Uribe administrations (2002–2010)

The electoral victory of Uribe in May 2002 was an unprecedented political blitzkrieg. As late as December 2001 his poll numbers were languishing around 2%. Five months later he won in a landslide. There is little doubt that the event that triggered his rise in the polls was the collapse of the peace process, officially terminated in January 2002. (Ríos and Hidalgo, 2022) Before that, the process had been bogged down for quite a while, testing the patience of skeptics but as far as the polls were concerned, Uribe’s vociferous criticisms of the peace process were an exotic flavor in the electoral marketplace. After the talks collapsed, Uribe’s star did not cease to rise.

The Uribe Administration based its approach to the conflict on the assumption that a total military victory over the FARC-EP was at hand so that it was possible to dispense with any kind of dialog or negotiation. The most the government was willing to offer was some kind of amnesty to individual combatants. In the language of our formal model, the Uribe Administration reached levels of $\pi$ even higher than those of the Pastrana Administration or any previous administration for that matter. In fact, this increase in $\pi$ also meant an increase in the preference heterogeneity within the state. Moderate sectors did not simply disappear but were now sidelined (their $\omega$ dropped precipitously) and, as our model would predict, ended up supporting the hawkish views of the new government.

Symmetrically, the $\pi$ parameter also increased within the FARC-EP. They expected the accumulation of forces carried out during the peace talks to place them in good stead for the fight ahead and launched a strategy meant to lay siege to the country’s main economic and political centers, consolidating their presence on the ground in a push for final victory. The conflict reached the highest levels of intensity it ever recorded.
The government also ratcheted up the tendencies that were already in place from the times of the Pastrana Administration. (Ministerio de Defensa Nacional de Colombia, 2010) The new policy, christened the Policy of Democratic Security (henceforth PSD after its Spanish acronym), was summarized in the maxim “first security, then liberty.” As former President Uribe stated, he did not consider the FARC-EP as an insurgency but merely as a factor of public order disturbance that needed to be suppressed.

I never uttered or used the term “conflict.” The term “conflict” refers to disputes between insurgencies and dictatorships. Between guerrillas and non-democratic systems. In Colombia there has always been a slid democracy, challenged by groups that ended up being reduced to narco-terrorism. Neither have I ever used the term “war” because our problem in Colombia was one of public order. (Interview with Álvaro Uribe, June 2015, Bogota)

The data in Table 1 show that the levels of military confrontation continued to grow reaching an apex in 2003. From that point on, FARC-EP’s activity declines as shown by the number of combatants, armed operations, and geographic presence. In spite of the decline, the numbers by 2004 and 2005 were still among the highest in the history of the FARC-EP. Although these years represent the high point of inflow of money from the coca trade, so much so that it represented half of its revenue estimated in 1200 million USD (Aguilera, 2010), other sources began to dry up as the number of kidnapings shown in the same Table prove. By the year 2008, amid an increased military expenditure from the state, all the indicators of FARC-EP’s military prowess had dropped.

Former guerrilla commander Samir gives the following account of the guerrilla’s weakening:

The arrival of the PSD marks the beginning of a period of political and military constraints that breaks the growing trend the guerrilla experienced between 1993 and 2003. (…) Although it was not that visible, between 1998 and 2000 and until 2004 we began to be defeated. We lost two forms of expression [in reference to the political fronts created by the FARC-EP, the Clandestine Communist Party of Colombia (PCCC) and the Bolivarian Movement for a New Colombia (MNBC)] and so a retrenchment starts, the return of the guerrilla to the underground. (Interview with “Samir,” August 2015, Bogota.)

But by the year 2008 the tendency starts to halt and evidence begins to mount that the PSD was reaching its limits with final defeat of the FARC-EP remaining an elusive goal (Echandía and Cabrera, 2017). Conflict ripeness was in the horizon. If in 2008 the FARC-EP launched 381 armed incursions in 131 municipalities, in 2009 they launched 664 incursions in 164 municipalities
and 724 incursions in 166 municipalities in 2010 (see Figure 2). These levels of guerrilla activity were roughly comparable to those of 2005.

That said, the PSD marked the first time in which the top echelons of the FARC-EP were successfully targeted by the state. In 2004 “Simón Trinidad” was captured in Quito. In 2007 both the key operator of the coca trade in Guaviare and Vaupés, “Negro Acacio,” and “Fermín Caballero” the commander of the 37th Front were killed. In 2008, two of the highest-ranking members of the FARC-EP were killed in combat: “Iván Ríos,” commander of the Central Bloc and “Raúl Reyes,” commander of the Southern Bloc. (Pizarro, 2021) The PSD allotted a total of 1835 million USD to security and defense during Uribe’s first term and 5770 million USD during his second term (Uribe Vélez, n.d.: 33), (Uribe Vélez, 2010: 30), all this on top of another 8000 million USD coming from Plan Colombia (Otero, 2009).

This period saw the creation of 60 anti-guerrilla battalions, 15 mobile brigades, eight territorial brigades, more than 40 detachments with high precision snipers, 24 instruction, and training centers, 12 companies for the “Plan Meteoro” dedicated to road vigilance and nine support battalions. The High Mountain Battalions were optimized and deployed in the Farallones Park (Valle del Cauca), El Espino (on the Arauca, Boyacá, Casanare axis), Valencia (Cauca), Génova (Quindo) and in the Sierra Nevada of Santa Marta, as well

Figure 2. Geographical presence of the FARC-EP and distribution of military operations, 2007.
Source: ODHDIH (n.d.).
as in the Serranía de Perijá. The goal of such steps was to attack enclaves that, in spite of their low population density, had high guerrilla presence so as to weaken its backbone (Rangel and Medellín, 2010: 154).

If during the presidency of Andrés Pastrana there was a total of 1457 operations against the FARC-EP, in the eight years of Álvaro Uribe’s presidency the figure rose to 14,418 actions by the Military Forces against the guerrillas, distributed almost equally among the two presidential terms (see Figure 2). In 2002, the PSD started with Operation Freedom I aimed at wresting territorial control from the guerrilla, in this case by deploying 15,000 troops within an area of more than 70,000 km² which covered eastern Tolima, the entire department of Cundinamarca, northern Meta and southeastern Boyacá. This resulted in a symbolic defeat of the FARC-EP and the loss of some of its traditional leaders such as “Manguera,” “El Viejo,” or “Marco Aurelio Buendía” (Pizarro, 2011).

At the same time, the Joint Task Forces (within which the Omega stood out), began to attack directly the two most powerful blocks of the FARC-EP, the Eastern and the South, so that for the first time in a long while, the Colombian state forces moved into areas with heavy presence of the guerrilla such as Caquetá, Guaviare, Meta or Putumayo (Davis et al., 2016). By 2004 and 2005, the FARC-EP practically disappeared from the country’s central areas such as Cundinamarca, Caldas, Risaralda, Quindío, Boyacá, Santander, and the north of Meta (ODHDIH, n.d.), moving outwards to the country’s periphery (Ríos, 2016).

Between 2002 and 2010, 20,062 coca-processing laboratories were destroyed and 1233 tons of marijuana, 5.3 tons of heroin and 1269 tons of cocaine were seized. Likewise, while in 2002 the total area of coca crops was 130,364 Ha, by 2010 it had been reduced to 58,073 Ha. And this after almost a million hectares were sprayed with glyphosate (UNODC, 2013). The state regained control over major roads such as the Valledupar—Santa Marta, Valledupar-Maicao- Riohacha, Valledupar-Pailitas, Cartagena-Sincelejo or Medellín-Mutatá, where the FARC-EP had been perpetrating a specific type of kidnapping colloquially known as “miracle fishing” (Rangel and Medellín, 2010: 126). The reduction in FARC-EP’s troops was further accelerated by the demobilization of more than 15,000 guerrilla combatants, along with 30,000, captures and 10,000 casualties (Ministerio de Defensa Nacional de Colombia, 2010). All in all, there was a clear change in the military balance of power between the state and the insurgency, so that the conflict reached a stage of ripeness by the time Juan Manuel Santos came to office.

The Santos administrations (2010–2018)

As said before, by the end of Uribe’s second term, the FARC-EP were not militarily defeated but had rather suffered a serious strategic setback while
showing signs of resilience. But, overall, the conflict had reached some kind of stalemate. The FARC-EP were able to regroup and replenish, increasing their fighting capabilities, but were not able to go beyond peripheral enclaves highly dependent on the coca crop. At the same time, the government was having an increasingly hard time launching successful operations against the guerrilla. It seemed as if the time of a “mutually negative tie” had arrived.

During the first years of the Santos Administration, the figures displayed the same trend as before, that is, slight increases in the number of armed incursions from the FARC-EP (669 in 2011 and 824 in 2012) combined with an increase in the group’s geographical reach so that by 2011 it was active in 180 municipalities and by 2012 in 190 (see Figure 3).

Shortly after Santos was sworn into office, the FARC-EP’s leadership suffered two of its most serious blows with the deaths of its military chief, “Mono Jojoy,” during Operation Sodom (2010) and of its commander-in-chief Guillermo León Sáenz (alias “Alfonso Cano”) killed during Operation Odysseus (2011). (Observatorio de Derechos Humanos y Derecho Internacional Humanitario (ODHDIH), n.d.) Remarkably, parallel to these two spectacular blows, there was a decrease in the number of operations against the FARC-EP as shown in Table 1 and in Figure 3. In addition to

Figure 3. Geographical presence of the FARC-EP and distribution of military operations, 2012.
Source: ODHDIH (n.d.).
some rebound of the FARC-EP, the state’s forces were beginning to run into some limits. In its retrenchment, the FARC-EP had moved into peripheral strongholds that were very hard to reach by the state.

The way chosen to push the FARC-EP into a corner was by hitting its economic sources, its most outstanding cadres and cornering it geographically where it could not launch operations . . . it all starts with a plan conceived in 2000. “Marulanda” dies, then they eliminate “Mono.” They eliminate “Raúl.” Then “Iván Ríos.” The military wing was eliminated. Therefore it was easier to negotiate with the political wing than the military one.” (Interview with a member of the FARC-EP Central General Staff, June 2019, Bogota.)

As this statement illustrates, the balance of power within the insurgency had shifted in favor of the moderates and, as it was becoming increasingly apparent, a similar shift was taking place within the state. It is in this context that, in the summer of 2012, Juan Manuel Santos makes public the start of negotiations scheduled to begin in October of that year. The format and structure of the negotiations invited more optimism than during the previous episodes (Santos, 2019). The agenda was now trimmed down to six points and it was decided that talks would take place abroad (in Havana), in the presence of several international actors that would serve as facilitators: Cuba and Venezuela on behalf of the FARC-EP and Norway and Chile on behalf of the government. There were careful ground rules put in place for communicating any progress to public opinion so that there would be plenty of joint communiques (up to 109 by the end of the talks) in an effort to avoid leaks. That said, with few exceptions, there was no bilateral ceasefire, so the conflict continued, although at much lower levels than those prior to 2012 (see Table 1) (De la Calle, 2019; Ríos, 2021).

Apart from the military trends, we need to look also at the political shifts if we want to understand how the conflict’s ripeness led to a negotiated settlement. Although Santos ran for his first term on a platform of continuity with Uribe, ideological rifts emerged within the coalition they had formed, rifts that eventually burst into the open to the point that Uribe became Santos’s most vehement opponent, precisely over his attempts at making peace with the FARC-EP.

As the main negotiator of the Santos Administration stated, the new Administration saw the negotiation with the FARC-EP as an opportunity to launch a set of economic and social reforms that would allow the state to reach areas that it had abandoned in the past.

Even during the secret stage of talks, I told the FARC-EP, that for us, as government, the agenda agreed upon, an agenda of comprehensive rural development, of political representation, of we as a government understand that
this agenda that we have agreed, of comprehensive rural development, of political participation, of an adequate response to the victims, is not a laundry list. These are themes that have a logic of non-repetition, as I have already said, but which, in addition, their effect depends on whether we can put in place a regional focus within which we can put all these measures into practice. ( . . . ) Government after government, the state had shown no interest in these regions which then became available for the FARC-EP, the drug smugglers, the coca crops and the illegal economy. It was only when the threat became this great that the state reacted. It is of interest to govern these regions and that is why they remained at the disposal of the FARC-EP, at the disposal of drug trafficking, coca crops, and the illegal economy. Until the threat was so great that it reacted and stabilized those areas. Now what is the risk? In my opinion only a peace agreement was going to compel the state to face this problem holistically. Only a peace agreement, with verification, and with a timeframe of 10 to 15 years was going to force us, truly, to face that and to solve the historical problem of insecurity, but also of social injustice. (Interview with Sergio Jaramillo, February 2017, Bogota.)

From the point of view of the moderate voices in the ruling coalition, now empowered, conflict was no longer unavoidable and a mutually beneficial agreement was possible.

Although Santos came from within Uribe’s coalition, he represented the moderate sectors within it, those sectors that had supported the war escalation of the previous years but not as a means for total victory but rather as a way to strengthen their negotiating position. In terms of our model, Santos’s election represented an increase in the $\omega$ of those sectors, their relative weight within the government’s decision-making. By the same token, the other parameters of the model remained unaffected since the internal heterogeneity of the coalition (the $\pi$ values) and the ample access to military resources ($c$) did not undergo any change. From that point on, all that was needed was to soften the government’s stance so that, instead of trying to reduce the FARC-EP by attrition and defection, its key sectors could be brought back from the cold.

**Concluding remarks**

According to an old saying, the last casualty in a war dies in vain. Apart from its poignancy, that saying captures the essence of a problem that poses serious analytical challenges for the theory of conflict resolution: wars tend to outlast their political usefulness.

In the formal analysis of this paper we suggest that this question can be addressed by looking at the internal splits within the sides in a conflict. The escalation that for some factions may seem one more step toward final victory, for other factions, more averse to conflict, may seem as a measure
needed to secure a better negotiation position. So, to determine when a conflict is ripe for resolution we ought to look at once at the trajectory of the military balance of power between both sides of the dispute and the political balance of power between the factions within each side.

Our analysis shows that under such conditions there tends to be, so to speak, a “surplus” of militarization. Both sides have incentives to escalate the conflict beyond what their respective pivotal actors would choose single-handedly because, ultimately, the push by the most hawkish factions to escalate may also benefit the negotiating position that the moderates would want to take in a potential settlement. As an important by-product of our model, the size of that “surplus” is directly proportional to both the cost of resources and the heterogeneity of preferences within the two sides.

The long path toward a negotiated settlement in Colombia lends credence to these conjectures. In wars, the opponents face political constraints in their efforts at procuring military resources because they need to tax the population they control. In Colombia those constraints were substantially relaxed from the 90s for both the state (due to private paramilitary groups and American aid) and the FARC-EP from the 90s (due to access to money from the drug trade). As a result, both the state and the insurgency engaged in highly ambitious military planning.

But parallel to this military trend, there were other political forces at work. Over time, as the cost of the conflict grew, a split emerged both within the FARC-EP and the country’s political elites about the endgame. On both sides it can be said that while some sectors were willing to continue the escalation in search of the ultimate victory, others saw this spiral as just a means to the end of a better settlement. This explains why, when finally a peace accord was reached, its terms were significantly more generous, on both sides, than what they had been offering just a few years before.

The FARC-EP accepted a set of development plans and policies that were so moderate that they did not even require a change in the constitution. Some of them, such as the plans for regional limits to land tenure, were, in fact, pieces of legislation that had been approved more than twenty years ago and had remained dormant in the books. The government accepted to extend political recognition to the FARC-EP as a party and eased its transition into legal politics by conceding five seats in the Senate and five seats in the House of Representatives. These examples could be multiplied by reading the detailed and lengthy document of the final accord. During the Uribe Administration nobody would have expected these terms to lead to a settlement.

But if political splits are, ultimately, what make peace possible, Colombia’s case illustrates that they also make the post-conflict stage difficult. In fact, the rift between enemies and defenders of the peace process within the political establishment has marked the halting implementation of
the agreements, so much so that, to this day it is probably premature to say that Colombia has finally turned the page of its 50-year conflict.

Adding to the situation’s complexity, the ELN remains active and the peace process with that organization collapsed in 2018. The preceding analysis suggests that this time around, the dynamics of “overripeness” will repeat itself for several reasons. First, the discrepancies within the ELN are every day harder to ignore, indicating that it has also reached high levels of internal preference heterogeneity. While some of its factions send signals of a willingness to talk, others have redoubled their military efforts. Second, the ELN’s prospects for military growth have improved after the peace process with the FARC-EP. The latter group’s demobilization has created a vacuum in several areas of the country, a vacuum that the ELN has been adept at filling with an increase in its number of recruits and consolidation of its territorial control. Compounding matters, the laggard implementation of the Havana Accords could well convey to the ELN that there is little to be gained from peace (Niño and Palma, 2018). Only time will tell if this forecast is correct.

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**Note**

1. In this paper we shall focus solely on the FARC-EP but although the largest, it was not the only armed insurgency in Colombia. In fact, the ELN (the Spanish acronym for the National Liberation Army) was founded in 1964 and remains active to this day. By the 70s and 80s of the past century there were more than six insurgencies, not to mention a smattering of small cells.

**References**


Appendix A

Formal model of conflict resolution

Since this is a stage game with imperfect information, the appropriate solution concept is that of Perfect Bayesian Equilibrium. Players have prior beliefs described by the distributions $F_S$ and $F_I$ and after Stage 1, having observed the choices $\tau$, they form updated posterior beliefs $F_S | \tau_S$ and $F_I | \tau_I$ which, in turn, they use as the basis to calculate their strategies in Stage 2. An equilibrium of the game is a combination of strategies and beliefs such that the strategies are optimal given the beliefs and the beliefs satisfy Bayes’s rule of updating. To characterize this equilibrium, consistent with the principle of backward induction, we first solve the Stage 2 game taking as given the posterior distributions $F | \tau$.

We shall illustrate the procedure for an arbitrary player $k \in S$; analogous calculations hold for players $m \in I$. First, we shall analyze the game assuming that $N = M = 1$, that is, that both $S$ and $I$ consist only of one player. Once we solve this case, it will be straightforward to extend the results to the more general case. For distributions $F$ we use, as usual, lower case $f$ to denote the probability densities. Denote the payoff from the possible conflict as:

$$v_k = \pi_k p(\tau_k, \tau_m).$$

For player $k$, the optimal offer $x_k^*$ at stage 2 is calculated by solving the following maximization program:

$$x_k^*(x_m) = \arg\max_{x_k} (x_k - v_k)P(x_k + x_m \leq 1 - e) + v_k,$$

$$= \arg\max_{x_k} (x_k - v_k) \int_0^1 \int_0^{1-x_k-x_m} f_f(x_m | \tau_m)d\epsilon dx + v_k,$$

$$= \arg\max_{x_k} (x_k - v_k) \int_0^1 (1-x_k-x_m) f_f(x_m | \tau_m) + v_k,$$

$$= \arg\max_{x_k} (x_k - v_k)(1-x_k - E(x_m | \tau_m)) + v_k$$

This results in the optimal value:

$$x_k^* = v_k + \frac{1 - E(x_m | \tau_m)}{2}.$$

With this solution we can now turn to the problem of finding the optimal choices $\tau$ in Stage 1. As usual in this type of games, we need to consider two possibilities: a separating equilibrium in which different players choose different values of $\tau$ depending on their parameter $\pi$ or a pooling equilibrium in
which players with different \( \pi \) parameters nevertheless choose the same \( \tau \). To determine the off-equilibrium beliefs we shall use the “Intuitive Criterion” (Cho and Kreps, 1987) according to which if a player observes an off-equilibrium signal, her beliefs put all the weight on the type most likely to benefit from the deviation.

First, we prove that there is no separating equilibrium. To prove this, let’s suppose that one exists. In that case, the posterior distributions \( F | \tau \) become degenerate and the optimal solution becomes:

\[
x_k^* = \frac{v_k + 1 - x_m}{2}.
\]

By the same token, this implies that for players in \( I \):

\[
x_m^* = \frac{v_m + 1 - x_k}{2}.
\]

The optimal value \( \tau_k^* \) solves the maximization program:

\[
\tau_k^* = \arg \max_{\tau} y_k (1 - \tau) + (1 - x_m - x_k^*)^2 + \pi_k p(\tau, \tau_m).
\]

From this it is clear that \( \tau_k^* \) is increasing in \( \pi_k \). At the same time, from the analysis of Stage 2 shows that \( x_m^* \) is decreasing in \( \pi_k \). Consider two possible values \( \pi_k < \pi_k' \). If the player with parameter \( \pi_k \) deviates to \( \tau_k(\pi_k') > \tau_k^*(\pi_k) \), she benefits from this deviation if:

\[
\pi_k \frac{p(\tau(\pi_k'), \tau_m) - p(\tau(\pi_k), \tau_m)}{x_m(\pi_k') - x_m(\pi_k)} - (x_m(\pi_k') + x_m(\pi_k)) > y_k \frac{\tau(\pi_k') - \tau(\pi_k)}{x_m(\pi_k') - x_m(\pi_k)} - 2(1 - x_k^*).
\]

So, there exists some critical value \( \hat{\pi} \) for which if \( \pi_k > \hat{\pi} \), \( k \) has an incentive to choose a \( \tau > \tau^*(\pi_k) \) causing the separating equilibrium to unravel.

In principle, there could be several pooling equilibria depending on the precise off-equilibrium beliefs we stipulate. But they all share the basic properties of comparative statics so we shall only characterize a simple one in which pooling occurs around two extreme levels of \( \tau : 0 \) or 1.

In such pooling equilibrium there is a critical level \( \bar{\pi} \) such that if \( \pi_k > \bar{\pi}, \tau^*(\pi_k) = 1 \) while if \( \pi_k < \bar{\pi}, \tau^*(\pi_k) = 0 \). In this case, the posterior beliefs become:
The cutoff point $\tilde{\pi}$ is the one that satisfies the following equation:

\[ y_k + (1 - x_m(0) - x_k^*)^2 + \bar{\pi} p(0, \tau_m) = (1 - x_m(1) - x_k^*)^2 + \bar{\pi} p(1, \tau_m), \]

which can be rewritten as:

\[ y_k - 2(1 - x_k^*) + x_m(0) + x_m(1) = \bar{\pi} \frac{p(1, \tau_m) - p(0, \tau_m)}{x_m(0) - x_m(1)}. \]  

(1)

From this we can obtain the following two results of comparative statics that serve as the basis for the analysis in the paper’s main body.

**Lemma 1** The value $\tilde{\pi}$ is:

- decreasing in $\text{Var} \left( \pi_k \middle| F_k \right)$,
- decreasing in $c$.

**Proof:** The first statement follows from the definitions:

\[ x_m(0) = \frac{v_m + 1 - E(x_k \middle| 0)}{2}, \]

\[ x_m(1) = \frac{v_m + 1 - E(x_k \middle| 1)}{2}. \]

Any increase in $\text{Var} \left( \pi_k \right)$ according to the prior distribution results in a decrease of $E (\pi_k \middle| 0)$ and an increase of $E (\pi_k \middle| 1)$ according to the posterior distributions, which in turn result in an increase of $x_m(0)$ and a decrease of $x_m(1)$, which means a increase in $x_m(0) - x_m(1)$ (while the $x_m(0) + x_m(1)$ remains the same as the changes in the two terms cancel each other).
The second statement follows from the fact that $p$ is increasing in $c$ so that as $c$ increases, the difference $p(1, \tau_1) - p(0, \tau_1)$ increases so the value $\tilde{\pi}$ that satisfies equation (1) decreases.

To extend the results to the case $N, M > 1$, we introduce vectors of weights $\omega_S = (\omega_1, \ldots, \omega_N); \omega_I = (\omega_1, \ldots, \omega_M)$ and define the decision rules of $S$ and $I$ so that the optimal strategies for group $S$ are:

$$\tau_S^* = \sum_{k=1}^{N} \omega_k \tau_k^*,$$

$$x_S^* = \sum_{k=1}^{N} \omega_k x_k^*,$$

with an analogous definition for $\tau_I^*$ and $x_I^*$. Since the groups’ strategies are linear combinations of the individual strategies, they inherit their properties and hence the results remain valid.