Handbook on the Economics of Conflict

Chapter: Social divisions and Conflict

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Summary

1. Introduction

There is a large, mostly empirical, literature on the determinants of social conflict. This chapter focuses on the role of the societal distribution of individual characteristics in understanding social conflict. Our exploration will focus on two primary types of individual traits: economic factors, like income or wealth, as well as non-economic attributes, including aspects such as ethnicity, religiosity, or linguistic diversity. Throughout this analysis, we proceed with the assumption that the pertinent societal division, whether it be economic or otherwise, is given. Therefore, we do not address the issue of salience, which is explored in depth in Chapter XX (Genicot and Ray) of this Handbook.

By conflict, we specifically refer to within-country unrest, covering a spectrum that ranges from nonviolent actions such as protests, marches, and strikes, to more intense forms of upheaval, including violent rebellions and civil wars. Such conflicts, irrespective of their nature, are characterized by their organized structure. They involve groups and are rooted in within-group identity and cross-group antagonism. Moreover, conflict has different dimensions and the factors triggering a new conflict differ from those explaining its persistence or its intensity.[1] As we explore the various drivers of conflict, we'll specify their relevance to each dimension of conflict.

Since World War 2 one third of all countries have experienced civil war, a most intense form of social conflict. These conflicts have often manifested as violence stemming from economic disparities, but a majority of them appear to be rooted in ethnic

[1] See Bazzi and Blattman (2014).

divisions.[2] The death toll of intra-state conflicts for the past thirty years is well above 3,000,000 deaths, and conflict in 2022 contributed 150,000 additional deaths.[3] Besides the enormous toll of conflict deaths, we have to add the massive forceful displacement of population caused by the violence of civil conflicts with over 100 million people displaced and also the enormous economic costs inflicted by civil conflict.[4,5]

This Chapter revolves around several questions: How do we conceptualise and measure social divisions? It is the case that divisions along economic and/or ethnic lines significantly matter for conflict? And if it is indeed true that ethnic cleavages and conflicts are related, how do we interpret such a result? Do "primordial", ancestral ethnic hatreds trump "more rational" forms of antagonism, such as the instrumental use of ethnicity to achieve political power or economic gain? How does the nature of the benefits that the contending parties are fighting for matter in understanding the relation between social divisions and conflict? And, finally, how do the joint distribution of income and ethnicity interact to precipitate conflict? This comprehensive exploration aims to provide a deeper understanding of the multi-layered causes of internal conflicts, highlighting the complex interplay of economic and ethnic factors. To address these questions, we posit that a blend of theory and robust empirical evidence offers the most insightful answers.

A key step when exploring the role of social divisions is to accurately define and measure these divisions. Economic disparities typically give rise to class divisions, while differences in non-economic factors lead to ethnic or linguistic groupings. However, for any given configuration of such groupings within a society, there are various ways to compute indices that conceptualise and summarize them. How should an index be chosen? This chapter emphasizes the fact that, ideally, this choice should be dictated by the underlying mechanisms that link societal divisions and potential conflicts in the first place. Therefore, rather than postulating a particular index off the shelf, it is more informative to derive the appropriate measure(s) from the equilibrium conditions of theoretical models of conflict.

[2] More than half of the civil conflicts recorded since the end of the Second World War have been classified as ethnic or religious. See Fearon and Laitin (2003).

[3] Data from the Uppsala Conflict Data Program, https://ucdp.uu.se/downloads/.

[4] See UNHCR's (2023) report.

[5] See for instance Bozzoli, Brück and Sottsas (2010) for a panoramic report of the estimates of the economic cost of civil wars.

In the context of economic divisions, the impact of Marx's theories, which emphasize class struggle and economic disparity as fundamental drivers of conflict, has prompted researchers to frequently employ standard measures of inequality, such as the Gini coefficient, in their empirical analyses. In the case of ethnic divisions, various metrics have been proposed to capture the concept of "ethnic division," with the most well-known being the fractionalization index, which measures ethnolinguistic fragmentation. However, empirical analyses do not find a robust link between standard measures of inequality and conflict (Lichbach 1989, Fearon and Laitin 2003), nor between fractionalization and conflict (Fearon and Laitin, 2003, Collier and Hoffler, 2004).

It would be premature, however, to conclude from these results that ethnic or economic divisions are not drivers of conflict. In the case of ethnicity, the concept of "ethnic division" is complex and not entirely captured by diversity measures. Several authors have shown that measures of ethnic polarization are positively related with conflict (Montalvo and Reynal-Querol, 2005, Esteban, Mayoral and Ray, 2012a). Esteban and Ray (2011a) rationalize these findings and propose a model of conflict from which they analytically derive the relevant indices driving conflict intensity. It turns out that the nature of the benefits that the contending parties are fighting for is crucial to understanding when and why different indices of ethnic divisions matter. These benefits typically have a "public" character — such as ideological or religious dominance, or the pursuit of political power — or a "private" one, such as control over specific resources, including oil or mining revenues (or, in some cases, a combination of both). They show that fractionalization matters when the conflict is over private payoffs, such as access to resource rents, while polarization is key in conflicts over public goods, see Section **??** for details.[6] This approach also helps interpreting the role of ethnicity, lending support to the *instrumentalist* perspective. This view considers ethnicity a strategic tool for forming groups aimed at acquiring economic or political power, contrasting with *primordialist* perspectives that view ethnic differences as ancient and irreconcilable.

[6]The index of polarization is intended to gauge social "antagonism," believed to be driven by two main elements: the "alienation" experienced among different groups' members and the sense of "identification" with one's own group. This index is defined as the sum of all interpersonal antagonisms. Its primary components include the distances between groups (indicating the degree of alienation between them) and the size of each group (serving as a measure of the extent of identification within the group). See more in Section **??**.

Regarding economic divisions, the literature still lacks a deeper theoretical analysis that could potentially improve our understanding of the data, along the lines of the existing work on ethnic divisions. From an empirical perspective, the absence of a clear-cut relationship between inequality and conflict calls for further examination. The divide between economic classes presents a paradoxical situation: while it fosters resentment, it also deprives the impoverished of means to mount a successful insurrection.

Non-economic cleavages, such as ethnicity or religion, can bypass these complexities. Specifically, when conflict is between ethnic groups, the disparity in income levels *within* a group can facilitate the financing of conflict. This is due to the fact that higher inequality within a group reduces the opportunity costs of participating in conflict. When within-group inequality is high, the economically disadvantaged may require only minimal compensation to join the fight due to their dire financial situation, whereas the affluent are better positioned to fund the conflict (Esteban and Ray, 2011b). This underscores a significant interplay between ethnic tensions and income disparities *within* groups, that emerge as a potent catalyst for escalating conflict *intensity*.

Another strand of research emphasizes the role of economic inequality *across* ethnic groups. Proponents of this view argue that the inability to establish a direct relationship between inequality and conflict primarily stems from researchers focusing on measures of individual income (vertical inequality) instead of examining group-based economic disparities, also known as *horizontal* inequalities (Stewart, 2008). They argue that in many societies, social distinctions such as language and religion are more potent in creating group solidarity. This solidarity is crucial for motivating individuals to participate in rebellions, even at personal risk. Group identity, in these cases, acts as a unifying force, potentially leading to conflict either to maintain a group's privileges or to improve its disadvantaged status, implying that inequalities that coincide with group divisions are more likely to lead to rebellion than those between individuals. Horizontal inequality is typically linked to the *onset* of conflict. It's argued that the disparity in income and resources between different ethnic groups can create strong incentives for initiating conflict, irrespective of whether the groups are relatively rich or poor.

In conclusion, this chapter aims to enhance our understanding of social conflicts by delving into the complex nature of societal divisions. It will encompass a thorough

review of the principal theoretical frameworks and empirical findings in this field, offering a comprehensive overview of current literature. This analysis, by exploring the interaction between economic and non-economic factors, aims to provide a deeper insight into the mechanisms of conflict dynamics, which is crucial for the development of effective policy interventions and conflict resolution strategies.

The structure of the chapter is as follows: Section **??** discusses the different notions and measures of social divisions. Section **??** focuses on exploring the connection between income inequality and conflict. Section **??** investigates the role of ethnic divisions on conflict. Section **??** synthesizes key theories and empirical evidence regarding the impact of group-level inequality on conflict. Finally, Section **??** concludes.

2. Measuring Social Divisions

We start by examining two distinct families of indices employed for quantifying social divisions along economic and non-economic cleavages, these being income, wealth, ethnicity, religion, etc. The first set of indices, discussed in Section **??**, centers on measuring inequality. These indices provide insights into the distribution of resources or attributes within a population, shedding light on deviations from an even distribution. In contrast, the second family of indices, described in Section **??**, focuses on polarization indices. These metrics assess the existence of polarized clusters within a society, contributing to a deeper understanding of its structural makeup.

2.1. Inequality Measurement. For the sake of expositional simplicity we shall focus first on uni-dimensional distributions defined over discrete and non-negative individual incomes. We shall next examine the case of distributions over non-economic –ethnic or linguistic– markers.

2.1.1. Income Inequality: the Gini coefficient. The literature offers a wide range of inequality indices, even when focusing specifically on personal income or wealth inequality. What do these indices have in common? In other words, is there a fundamental "core" that these indices share? Analysts may seek a clear and indisputable criterion for ranking income distributions by the inequality they reflect.

Fortunately, there is broad consensus on the answer. This criterion is the well-known principle of progressive transfers, first formulated by Pigou and Dalton.

This principle posits that if one distribution can be transformed into another by a series of regressive transfers from the less affluent to the more affluent, then the former should be considered more equal and the latter more unequal. It's noteworthy that no actual sequence of transfers is required to connect these two distributions; it's sufficient that such transfers could theoretically exist. It becomes evident that not all arbitrary pairs of income distributions can be unambiguously compared using this Pigou-Dalton criterion. Then, from a mathematical standpoint the Pigou-Dalton axiom establishes a partial ordering on the space of income or wealth distributions. Every inequality measure used in economics, including the coefficient of variation, the Gini coefficient, and the Theil entropy index, adheres to this partial ordering by ranking any pair of distributions in the same manner as the Pigou-Dalton principle whenever it is applicable.

Undoubtedly, the most widely used index is the Gini coefficient, named after the Italian statistician Corrado Gini. To compute the Gini index, the Lorenz curve is an important graphical tool. The Lorenz curve plots the cumulative percentage of income or wealth held by the bottom x% of the population against the corresponding cumulative percentage of the population. If income or wealth were evenly distributed, the Lorenz curve would coincide with the 45-degree line representing perfect equality. However, as disparities increase, the curve bends away from this line, reflecting greater inequality.

The Gini index is defined as twice the area between the Lorenz curve and the line of perfect equality. For discrete income distributions, the mathematical formula can be written as follows. Consider the collection of pairs (n_i, y_i), $i = \{1, ...r\}$, where y_i and n_i denote the income and the relative size of group i, r is the number of distinct incomes, $\sum_i^r n_i = 1$, and $0 \leq y_i < y_{i+1}$. Then, the Gini index is defined as the weighted average of all inter-personal income differences normalized by (twice) the mean income μ, that is,

$$G = \frac{1}{2\mu} \sum_{i=1}^{r} \sum_{j=1}^{r} n_i n_j |y_i - y_j|, \text{ with } \mu = \sum_{i=1}^{r} n_i y_i. \tag{1}$$

A higher Gini index suggests greater inequality and it operates on a scale that spans from 0 to 1. A Gini index of 0 signifies perfect equality, implying that all individuals possess identical income or wealth. In contrast, a Gini index of 1 suggests extreme inequality, suggesting that one individual possesses the entirety of the income or wealth while the remaining population has none.[7]

The Gini index has been fully axiomatized by Thon (1982), Ben Porath and Gilboa (1994) and Aaberge (2001). Based on Ben Porath and Gilboa (1994), G can be obtained from a standard set of technical properties: *Completeness, Transitivity, Continuity* and *Symmetry*, plus the properties of *Order Preserving Transfer* and of *Inequality Aversion*. An index satisfies all these conditions if and only if it is the Gini coefficient (Theorem B in Ben Porath and Gilboa). The condition *Order Preserving Transfer* requires that, if we transfer t from some income to a lower one in two distributions, say F and H, the one initially ranking higher in the inequality ordering should continue to rank higher after the transfer. Finally, *Inequality Aversion* requires that for any distribution a transfer of t from income y_{i+1} to the immediate below income y_i, the inequality of the resulting distribution should rank lower than the initial one. Clearly, *Order Preserving Transfer* and *Inequality Aversion* are closely connected to the Pigou-Dalton *Progressive Transfer Principle* and, therefore, to the inequality ranking based on Lorenz curves comparisons.

2.1.2. Ethnic Divisions: the Greenberg-Gini and the Fractionalization indices. We now briefly consider the adaptation of the inequality measure defined above to the case where the distribution is on an ethnic characteristic. Let n_i be the share of the population with ethnic identity i, $i = \{1, ..., r\}$, and $\sum_i^r n_i = 1$. Also, let $d_{ij} \geq 0$, with $d_{ii} = 0$, be some measure of "cultural" distance between groups i and j. Then, in the same spirit as in the case of income, we define the Greenberg-Gini index as the average of these distances as we take each location in the support as a reference point. We write it in unnormalized form as

$$\overline{G} = \sum_{i=1}^{r} \sum_{j=1}^{r} n_i n_j d_{ij}. \tag{2}$$

[7] For continuous income distributions, the Gini index can be computed as $G = \frac{1}{2\mu} \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} f(x) f(y) |x - y| \, dx \, dy = 1 - \frac{1}{\mu} \int_0^{\infty} [1 - F(y)]^2 \, dy$, where $f(.)$ and $F(.)$ denote density and cumulative distributions, respectively.

As it turns out, this is the index proposed by Greenberg (1956) to measure the diversity of languages in a country taking into account the distance between languages. Notice that now $d_{ik} + d_{kj}$ needs not be equal to d_{ij}.

Since in this context computing d_{ij} is not always an easy task, the simpler measure of *Fractionalization*, F, has become quite widely used in the measurement of ethnic diversity.[8] This measure, also known as the Hirschman-Herfindahl index, can be obtained from $\overline{G}$ by setting $d_{ij} = 1$ if $i \neq j$, and $d_{ii} = 0$ and it's given by,

$$F = \sum_{i=1}^{r} n_i(1 - n_i) = 1 - \sum_{i=1}^{r} n_i^2. \tag{3}$$

F is a strictly quasiconcave function of the population share vector with the following properties: (i) Any transfer of population from a group to a smaller one increases F. (ii) For a given number of groups, r, F is maximized at the uniform population distribution over these groups. (iii) Over the set of uniform distributions, F increases with the number of groups. And (iv), the split of the population of any group into two new groups increases F.

This measure is very intuitive as it can be interpreted as the probability that two randomly chosen individuals belong to different groups. As a result, F increases with the number of groups and attains its maximum when there are as many distinct groups as individuals. Despite its simplicity, Greenberg (1956) preferred the index $\overline{G}$ over F, as he considered that the distance between languages is an essential component in the diversity measure.[9]

2.1.3. Income equality and ethnic divisions: Vertical vs. Horizontal Inequality. Section **??** presents measures of inequality among individuals, often termed as *vertical* inequality. In an ethnically divided society we may wish to assess whether ethnic identity is relevant in explaining the inequality of individual incomes. An extreme scenario would be one in which all income inequality occurs *across* groups, with no inequality within them. Inequality occurring across groups is referred to as *horizontal* inequality. In this case, the computed inequality for the whole economy would be fully explained

[8] The index F was used in the 1964 Soviet Atlas Narodov Mira on the languages in the world as a within-country indicator of linguistic diversity.

[9] Fearon and Laitin (2003) made the same argument about the need for taking into account the perceived inter-language distances. The indicator for the distance between any two languages they propose is the number of steps to be taken along the *language tree* in order to find the common ancestor.

by income differences across the ethnic groups and their population sizes. If, on the other hand, ethnic identity doesn't play any role in the distribution of income, groups would show comparable levels of intra-group inequality and analogous mean incomes, i.e., zero horizontal inequality. In less extreme cases, aggregate inequality results from both between-group income differences and within-group differences in individual incomes.

Ideally, we would like to decompose aggregate inequality into the inequality happening *between* and *within* groups. This issue can be formally dealt with by *additively* decomposing aggregate inequality into the inequality across groups –using the groups' mean income and relative population – and the weighted average of the within-group inequality levels. The Theil index –not very used in the economics literature– is the sole inequality measure that is exactly decomposable additively into the between and the within group inequality. The Gini index can be additively decomposed but this includes a third term collecting the effect of the eventual overlap of the support of the income distribution of each group, see Lambert and Aronson (1993) for a discussion.[10]

2.2. Polarization. Income and wealth inequality have been traditionally seen as potential drivers of social conflict. Sen (1973) asserts the link between inequality and conflict.[11] But is this link so unquestionable? Let us consider first the *principle of progressive transfers* discussed above which constitutes the foundation of modern inequality measurement. A transfer from some individual to a poorer individual –respecting the rank order of the incomes– is an income-equalizing change in the distribution and, hence, such a progressive transfer should unquestionably be considered inequality reducing. Consider now the case of two sequences of progressive transfers restricted to each take place within incomes below/above the median income. Accordingly with the *Principle of Progressive Transfers* the resulting distribution has unquestionably equalized the incomes: of the poor among themselves and of the rich among themselves. Inequality has come down. But notice that the process just described creates in the limit two poles, one on each side above/below the median. Although inequality has decreased, this society appears more neatly divided between rich and poor after the sequence of progressive transfers. This clustering of

[10] See also Bahgat et al. (2017), who summarize different measures of within and between inequality that have been recently employed in the conflict literature, for instance Østby's (2008).

[11] More on this in Section **??** below.

the population in well-defined groups, distant from each other, is what *polarization* attempts to measure. Clearly, inequality and polarization are distinctively different concepts which may run in opposite directions.

Polarization has lately become a key concept in political science and also in economics. Nolan McCarty (2019) notes that "*[. . .]Commentators use few words to describe the American political scene as frequently as they use the word polarized*". But unfortunately, the terms polarized and polarization have taken on such a wide variety of meanings among journalists, politicians, and scholars that they often confuse, rather than clarify, the problems that our political system faces.[12]

A number of polarization indices have been proposed. Yet, its precise meaning has remained somewhat ambiguous. In a very broad sense, there is agreement in that polarization is designed to capture separation or distance across clustered groups in a distribution, interacted with the degree of cohesion within each group. According to this intuition, an increase in the *spread* of income relative to the median, or a progressive *bi-polarity increasing* redistribution restricted to either side of the median, should increase polarization. However this broad notion has been implemented in different ways.

We can classify the measures of polarization in two classes. One family of *polarization* measures attempts to capture this separation/clustering over distributions concentrating mass around any arbitrary number of groupings. Esteban and Ray (1991, 1994), Duclos, Esteban and Ray (2004), Reynal-Querol (2002a) and Esteban, Gradin and Ray (2007) are members of this family. A second set of measures treats polarization as essentially a *two-spike* phenomenon. This family includes Foster and Wolfson (1992, 2010), Wolfson (1994, 1997), Chakravarty and Majumder (2001) and Wang and Tsui (2000), all measures of *bi-polarization*. According to this approach, the polarization index quantifies how closely a given income distribution resembles an extreme bi-polar distribution, where two equally sized groups are located at the opposite ends of the bounded support.

The main indices of polarization are:

[12]This view is also shared by Paul Bauer (2019): *"The increasingly popular concept of polarization is used to describe various social phenomena such as political opinion, health and income polarization. Despite this popularity it is still debated within disciplines how polarization should be conceptualized and how it should be measured."*

- Wolfson:
$$P^W = \frac{\mu}{2m}\left[1 - 2L_m - G\right],$$
with m =median and L_m = share of total income of the half lowest incomes;
- Chakravarty-Majumder:
$$P^{CM} = \Phi\left[I(p^-, x), I(p^+, x), m, \mu^-, \mu^+\right]$$
where Φ is a function strictly decreasing in each of its first two arguments, I is an inequality index satisfying the transfer principle, p^- and p^+ are the probability vectors assigning 0 to the values above the median income and the ones below respectively, and lastly μ^-, μ^+ are the mean incomes below and above the median;[13]
- Wang-Tsui:
$$P^{WT} = k\sum_i \left|\frac{x_i - m}{m}\right| pi, \text{ and}$$
- Esteban-Ray:
$$P_\alpha = \sum_i \sum_j n_i^{1+\alpha} n_j |x_i - x_j|, 0 < \alpha \leq \alpha^*, \alpha^* \simeq 1.6$$

How do these different measures perform? How different they are from each other?

We shall now summarize the contributions by Chakravarty and Majumder (2001) and Esteban and Ray (2012) to the analysis of the similitudes and the differences between the two sets of indices.[14] To this effect they compare the principles used in the axiomatization of the two polarization indices as well as their consistency with three properties that can be reasonably associated to the notion of polarization.[15]

The fundamental axioms of the bi-polar measures by Wolfson and Chakravarty and Majumder are:

(1) *Increased spread, IS*: The measured polarization should not decrease after a shift down of some incomes below the median and/or a shift up of some incomes above.

[13] Note that P^{CM} is a generalization of P^W, the latter case using the G index in place of a generic I.

[14] Amiel, Cowell and Ramos (2010) perform a test on which polarization axioms are closer to the intuition of the respondants.

[15] For the sake of brevity we shall skip the measures by Zhang and Kanbur (2001), G. Rodríguez and Salas (2003), and Esteban, Gradín, and Ray (2007).

(2) *Increased bi-polarity, IB*: the measured polarization should increase after a progressive transfer not going across the median income. Notice that the statement includes progressive transfers within one side only.

The key axioms of the ER polarization measure:

- If a distribution is composed of a *single*, symmetric density with bounded support $[a, b], a \geq 0$, then squeezing the mass towards the median cannot increase polarization.
- If a symmetric distribution is composed of three densities with non-overlapping bounded supports $[a_i, b_i], a_i \geq 0$, then a symmetric squeeze towards the own median of the two *side* densities cannot reduce polarization.
- If a symmetric distribution is composed of four densities with non-overlapping bounded supports $[a_i, b_i], a_i \geq 0$, then a symmetric slide of the two *inner* densities towards the *outer* densities should increase polarization.

We can easily verify that the two axioms of bi-polarization *imply* the three ER axioms. However the reverse does not hold. Notice that while ER requires the formation of poles by progressive transfers be symmetric on both sides, W allows for it be one sided.

In spite this difference the two families of polarization indices share a similar approach. In fact, the "behavioral" intuition provided in ER (1994) captures this shared view on polarization. This is the *identity-alienation* framework[16] starting with the claim that polarization can be captured by the aggregate level of interpersonal antagonism underlying each distribution (uni-dimensional) of income or wealth.[17] According to

[16]The Identity-Alienation framework is very close to Bueno de Mesquita's (1975) view on polarity and international war. This view seems to be shared also by Sen (2006): "A sense of identity can be a source not merely of pride and joy but also of strength and confidence... A strong –and exclusive– sense of belonging to one group can in many cases carry with it the perception of distance and divergence from other groups. Within-group solidarity can help to feed between-group discord" (pp. 1-2). The paper by Stewart, McCarty and Bryson (2020) is also in line with the Identity-Alienation framework: *"Polarization is a social phenomenon in which a population divides into belligerent groups with rigidly opposed beliefs and identities that inhibit cooperation and undermine pursuit of a common good."*

[17]The notion of *affective polarization* has nowadays become extremely popular in Political Science. According to Boxell, Gentzkow and Shapiro (2022), affective polarization is the social average of individual partisan affects. And partisan affect reflects the extent to which each individual has a more favorable attitude with respect to the own party than towards other parties. Therefore, affective polarization appears to share the same spirit as the ER focus on inter-personal antagonism, driven by identification and alienation. Note that we are taking d_{ij} as exogenously given, while the current literature in political science on affective polarization focusses on the determinants of the felt inter-group

ER, interpersonal antagonism results from the joint effect of the sense of identification with their kins and the alienation towards the other individuals. Clearly, *increased spread* is captured by the increased alienation and *increased bi-polarity* results from an increase of the sense of identification produced by a higher internal cohesion.

There are important directions in which the measures of the two families would react differently. Esteban and Ray (2012) propose three additional properties that a polarization measure should reasonably posses. They prove that the bi-polar measures fail to satisfy the three properties.

Let's mention here the property that seems more relevant to the understanding of the performance of these two families of measures: Consider a uniform distribution with support $[a, b]$ and partition the support into r connected, non-overlapping segments. Suppose now that in each segment we concentrate all the mass at the mid point, the conditional medians. Now we face a multipolar distribution with R spikes. It seems natural to expect that a polarization index would record this change as an increase in polarization. Indeed this is the case for the multi-polar family of indices. But the bi-polar record an increase or a decrease depending on whether the number of resulting spikes r is even or odd.

2.2.1. Polarization and ethnic divisions. We have so far discussed the measurement of polarization to distributions of personal income or wealth. As pointed out in Duclos, Esteban and Ray (2004), the measure of polarization can also be applied to the distribution of non-economic variables such as religion, language, ethnicity... In this case d_{ij} is the *alienation* felt by an individual of type i relative to individuals of type j. They present the measure of *pure social polarization*,

$$P_\alpha = \sum_{i=1}^{r} \sum_{j=1}^{r} n_i^{1+\alpha} n_j d_{ij}. \tag{4}$$

This is their equation (14). For $\alpha = 1$ the measure of ethnic/social polarization becomes

$$P_{\alpha=1} = P = \sum_{i=1}^{r} \sum_{j=1}^{r} n_i^2 n_j d_{ij}. \tag{5}$$

affective distances. See the recent papers by Boxell, Gentzkow and Shapiro (2022) on cross country comparisons of affective polarization, by Canen, Kendall, and Trebbi (2020) on political polarization, and by Iyengar, Lelkes and Sood (2022) on affect and social identity.

The component d_{ij} has been measured in different ways. For instance, Montalvo and Reynal-Querol (2005) make the assumption that ethnic cleavages divide society between "us" and "them", consistent with the claim by *social identity theory* SIT as developed by Tajfel and Turner (1979). Consequently, Montalvo and Reynal-Querol specify the polarization measure P in (**??**) by further assuming that $d_{ij} = 1$, if $j \neq i, d_{ii} = 0$ and $\alpha = 1$, and obtain the Q measure of ethnic polarization,[18]

$$Q = \sum_{i=1}^{r} n_i^2(1 - n_i). \tag{6}$$

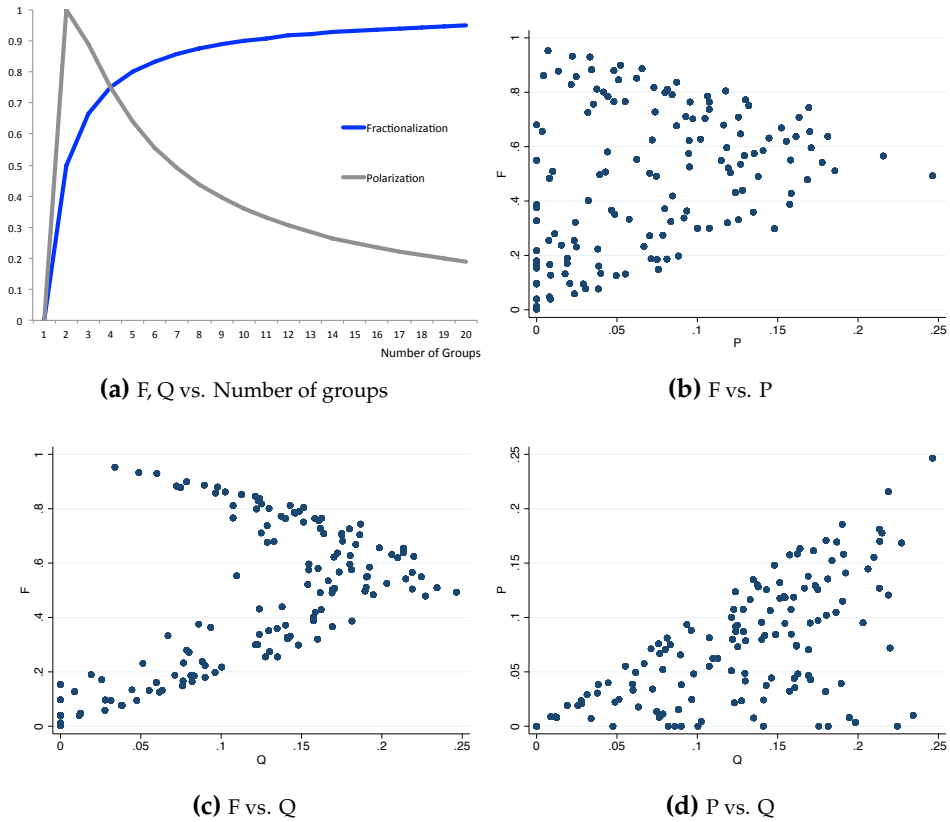
By contrast, Fearon (2003), Desmet, Ortuño-Ortín, and Wacziarg (2012), and Esteban, Mayoral and Ray (2012a, 2012b), for instance, do not impose this restriction on the value of d_{ij}, so that (**??**) continues to be the relevant measure of polarization. They assume that the distance between two "cultures", d_{ij}, can be captured by the lack of proximity on their respective languages.[19]

In societies marked by the presence of three or more ethnic groups, the behavior of the polarization metric significantly diverges from that of fractionalization. Unlike fractionalization, polarization decreases as groups further fragment, reaching its highest point when the population distribution exhibits a bimodal pattern. To illustrate the disparities between these two indices, Panel a) in Figure **??** considers a simple example where all groups have equal sizes. This graph displays both the fractionalization index versus Q, the polarization index where intergroup distances are set at 1. These indices are represented as functions of the number of groups within society. The plot shows the diverging patterns of these indices when there are more than two groups.

Empirically, the differences between the indices are also significant. Panel b) in Figure **??** displays F versus P for 138 countries. Data on ethnic divisions comes from Fearon

[18]The Q index can also be interpreted as the probability that of three random individuals two, and only two, belong to the same group.

[19]Specifically, they define the similarity between two languages, i and j, s_{ij} , as the ratio of the number of common branches in a language tree to the maximum possible number—(using data from the Ethnologue, the maximum number of branches two languages can share is 15 for the entire tree).Then, the distance between the two languages is defined as $d_{ij} = 1 - s_{ij}^{\delta}$, for some parameter $\delta > 0$. More in Section **??**.



(a) F, Q vs. Number of groups

(b) F vs. P

(c) F vs. Q

(d) P vs. Q

Figure 1. Indices of Ethnic Divisions: Fractionalization and Polarization. See Section **??** for definitions of the different indices. Panel a) assumes that groups are of equal size. Panels b) to d) use data on ethnic group size from Fearon (2003) and d_{ij} is proxied by linguistic distances, see Esteban, Mayoral and Ray (2012a) for details.

(2003) and d_{ij} has been proxied by linguistic distances as in Desmet et al. (2012).[20] The chart in Panel b) illustrates that not only are F and P distinct conceptually, but they also exhibit markedly different behavior in the data. Panel c) considers F and Q. It is evident from the plot that F and Q also diverge significantly but, lacking data on ethnic distances, Q is essentially a quadratic function of F. Lastly, Panel d) shows that Q and P also display substantial disparities in the data. This panel illustrates how taking into account inter-group distances results in a markedly distinct measurement from both Q and F.

[20] See Esteban, Mayoral and Ray (2012a) for details on the computation of these measures.

3. Income Inequality and Conflict

We now turn to explore how the above-described measures relate to the escalation, incidence and intensity of conflict. This section considers the case in which groups are defined by their economic status and focuses on the connections between income inequality and social conflict. While ethnic groups can aim at imposing their "culture" over the entire society and/or seizing economic resources, groups based on social class typically fight for a more favourable distribution of economic resources.

3.1. Theoretical Predictions. The idea that income inequality breeds conflict seems to be deeply rooted. Two millennia ago, Aristotle already made the point that a peaceful and true democracy requires that the wealth difference among the citizens should not be excessive: *"...Where some have great possessions, and others have nothing at all, the result is either an extreme democracy or an unmixed oligarchy; or it may even be, as a result of the excess of both sides, a tyranny [...]. Where democracies have no middle class and the poor are greatly superior in number, trouble ensues, and they are speedily ruined."* (Aristotle, *Politics*, book IV, 1295b35).

Subsequent political thinkers, such as Tocqueville, Machiavelli, and, most notably, Marx, concurred on the volatile nature of class disparities. Marx, in particular, regarded class conflict as the pivotal force propelling historical change, where the economic structures governing production dictated the prevailing political system. In his renowned work, "The Communist Manifesto," class was portrayed as the paramount and enduring group identity, one inherently fuelling the widespread collective movements during the Industrial era. These movements, led by the proletariat, were directed against the oppressive exploitation by the bourgeoisie. They ultimately aimed to establish a redistributive order that would prevent the accumulation of wealth and, consequently, mitigate conflicts. Class conflict, or the fear of it, is at the heart of taxation systems, which invariably display some degree of redistribution.[21] Gurr (1970)'s relative deprivation theory expanded upon Marxist ideas. His key insight was that when there's a significant disparity between what individuals believe they should rightfully have or expect and what they can

[21] It has also had a prominent role in the democratization literature. Acemoglu and Robinson (2000), for instance, propose a theory of democratization whereby economic elites in societies characterized by intermediate levels of income inequality opt for democratization as a means to forestall potential uprisings by the impoverished population, thereby securing political stability.

realistically achieve and sustain, their discontent and frustration amplify. As these feelings of frustration intensify, the likelihood of conflict erupting increases.

3.2. Empirical Evidence. Until the mid 1990s the nexus inequality-conflict attracted substantial attention from social scientists. However, the empirical results obtained were discouraging as they revealed no robust evidence of the inequality-conflict nexus, both for income and for land-ownership distributions. Lichbach (1989) offered the most comprehensive survey of the literature on the inequality-conflict nexus produced during the Cold War period. In this survey, he mentions forty three empirical papers on the inequality-conflict nexus and concludes that the overall evidence obtained by all these works is very mixed. Some studies support each possible relationship between inequality and conflict, and others show no relationship at all. Midlarsky (1988) remarks on the "fairly typical finding of a weak, barely significant relationship between inequality and political violence ... rarely is there a robust relationship between the two variables."

Much of this early literature had predominantly framed the connection between income inequality and conflict as a matter of social justice. In this view, frustration and discontent stemming from unfavorable economic conditions were thought to compel people to resort to violence as a means to rectify an unjust economic disparity between the affluent and the disadvantaged. However, in the early 2000s, a debate emerged regarding the primary drivers of violent conflicts, specifically whether they were grounded in "greed" (opportunity) or "grievance" (motivation). Leading figures in this debate included Collier and Hoeffler (2004), Collier et al. (2009), and Fearon and Laitin (2003). Collier and Hoeffler (2004), in particular, highlighted the prevalence of frustration worldwide, suggesting that this widespread phenomenon diminishes the explanatory power of the theory. Both Collier and Hoeffler (2004) and Fearon and Laitin (2003) employed income inequality, measured by the Gini coefficient, as a proxy for grievances. The empirical evidence presented in these papers lent support to the theories centered around "greed," with limited backing found for those emphasizing "grievance" as the primary driver. Thus, their findings aligned with the prevailing literature, revealing little substantiation for the notion that inequality played a significant role in predicting the outbreak of conflicts.[22]

[22]Several studies have shifted their focus from full-scale civil wars to what could be considered "lower voltage" conflicts, yet the outcomes remain inconclusive. For instance, Alesina and Perotti (1996) and Auvinen and Nafziger (1999) delve into these less intense conflict events and discover a

3.3. Takeaways. While the connection between inequality and conflict may seem intuitive, the results obtained by the many papers on the income/class inequality and conflict nexus remain ambiguous. It is worth considering why a straightforward correlation between economic inequality and conflict remains elusive.

Focusing on income inequality as a driver of conflict seems intuitive because one can reasonably expect the poor to feel antagonistic towards the rich when inequality is high. However, although the existence of antagonisms is an important aspect, it alone cannot explain the prevalence of ongoing strife. To sustain conflict those antagonisms have to be channeled into organized action, which can be challenging when economic disparities are significant. The economic divide between classes is a double-edged sword: while it fosters resentment, the very poverty of the less privileged makes a successful uprising difficult, as the poor will lack the costly means necessary for an effective class confrontation.[23] This suggests that the relationship between economic inequality and conflict might, if anything, be highly nonlinear. When inequality is low, the cost of conflict might exceed the potential modest benefits from redistribution, leaving little reason for conflict. Conversely, when inequality is very high, class conflict can be difficult due to the severe poverty of the have-nots. Hence, as pointed out by Nagel (1974), we should expect low levels of conflict at the two extremes of inequality.[24]

The previous argument also implies that income inequality may play a role in situations where groups are formed along non-economic lines. Notice that income heterogeneity among the poor and/or rich may have equivocal effects on group efficacy in conflict: while income heterogeneity among the poor may raise the resources allocated to financing conflict, it may also dilute the poor's goals. Conversely, heterogeneity of incomes within groups that are distinguished by non-economic factors, such as religion or ethnicity, may enhance their efficacy in conflict. This is because a broad range of income levels within such groups can offer inexpensive

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positive correlation between political instability and rising inequality. In contrast, Hegre, Gissinger, and Gleditsch (2003) did not identify any such relationship between these variables in their research.

[23]Tilly (1978) already argued that *"Without resources and organization, anger alone can do little to challenge powerful defenders of the status quo"*, as cited by Cederman, Gleditsch, and Weidmann (2011). In contrast Marx seems to believe that the poor had better chances to win because "[. . .]*the proletarians have nothing to lose but their chains*", the ending words of the Communist Manifesto (1848).

[24]This non-monotonic relationship was already observed by Tocqueville (1856) who remarked that "*the French found their condition the more insupportable in proportion to its improvement. [...] Revolutions are not always brought about by a gradual decline from bad to worse.*"

conflict labor on one end of the spectrum and ample economic resources for financing conflict on the other, a point to which we will go back in Section **??**.

In conclusion, the available evidence suggests that the relationship between income inequality and conflict is complex and cannot be characterized by a robust linear pattern. However, this does not preclude the existence of more nuanced non-linear associations between these variables. To enhance our comprehension of this phenomenon, a formal theory that explores the interconnections between inequality and conflict and derives implications that can be empirically tested is needed.

4. Ethnic Divisions and Conflict

The previous focus on class differences as a catalyst for conflict is understandable, as it is reasonable to expect that the impoverished would hold strong grievances against the wealthy. As described in the previous section, however, the existence of these grievances alone cannot explain the prevalence of ongoing conflicts. Sustained conflict requires the transformation of these grievances into organized action, which is often challenging when there is a significant disparity in economic power. By contrast, non-economic markers such as ethnicity – broadly understood to encompass language or religious affiliations– can be employed to distinguish groups of individuals who are economically similar rather than different. Often, the groups who are thus separated belong to comparable occupational spheres: they are all workers, tradespeople, or entrepreneurs operating within the same industry. When such markers take center stage, the benefits derived from conflict become more immediate: the defeated group can be excluded from the sector where they directly compete with the victors. Their shared economic similarity ensures that the process of "redistribution" from one group to another can be accomplished through direct means. This results in an alternative perspective on social conflict. While it may stem from economic incentives, its manifestations can be observed through *divisions* created by religion, ethnicity, or national backgrounds. Moreover, it can be intensified by deep-seated animosities and lingering resentments, which may have primordial origins or be influenced by a history of violence associated with these distinctive markers.

The notable surge in internal civil conflicts experienced in the Cold War made evident that a substantial portion, if not the majority of these conflicts, were characterized by violence rooted in ethnic divisions. More than half of the civil conflicts documented

since the conclusion of World War II have been categorized as either ethnic or religious in nature.[25] One criterion used to classify a conflict as ethnic is its involvement in a rebellion against the state on behalf of an ethnic group. Such conflicts have encompassed approximately 14% of the 709 ethnic groups identified globally (Fearon, 2006). In their examination of internal conflicts during the latter half of the 20th century, Brubaker and Laitin (1998) noted the *"eclipse of the left-right ideological axis" and the pronounced trend of ethnicisation of violent challenger-incumbent contests"*. Horowitz (1985) observes that *"...[t]he Marxian concept of class as an inherited and determinative affiliation finds no support in [the] data. Marx's conception applies with far less distortion to ethnic groups.*"

The pervasive presence of internal conflicts as well as their widespread ethnic nature raises several questions. Do "ethnic divisions" predict intra-country conflict? How should we frame our understanding of these divisions? If there is a connection between ethnic divides and conflicts, how should we interpret such a result? Do deeply ingrained, ancestral ethnic animosities outweigh "more rational" types of hostility, like the strategic manipulation of ethnicity for political or economic purposes? Is it possible to predict which ethnic groups are more predisposed to be involved in conflict? This section briefly summarizes some of the scholarly works that have attempted to provide answers to these queries.

4.1. Fractionalization, Polarization and Social Conflict. The extent to which "ethnic divisions" can reliably predict conflicts within nations hinges, at least in part, on what is meant by such a division.[26] Influenced by Easterly and Levine's (1997) findings on the inverse relationship between ethnic diversity and economic growth, the fractionalization index was the first measure employed to address this issue.[27] However, several empirical studies showed that the connection between ethnic fractionalization and conflict is at best quite weak (see Fearon and Laitin (2003), Collier and Hoeffler (2004) and Miguel, Satyanath, and Sergenti (2004) among others) Fearon and Laitin (2003, p. 82) conclude that the observed *"[...]empirical pattern is*

[25]See the Political Instability Task Force, http://globalpolicy.gmu.edu/pitf/pitfcode.htm and Fearon and Laitin (2003).

[26]Throughout this paper, ethnic divisions are assumed to be fixed and exogenous. See Michalopoulos (2012) and Arbatli et al. (2020) for a deeper exploration of the origins of ethnic divisions. See also the contributions by Spolaore and Wacziarg (2016a,b) and ff.

[27]Easterly and Levine (1997) rely on indices derived from ethnolinguistic categorizations found in the Soviet Atlas Narodov Mira (1964). More contemporary sources for such data can be found in Fearon (2003) and Alesina et al. (2003), among others.

thus inconsistent with . . . the common expectation that ethnic diversity is a major and direct cause of civil violence."

Nevertheless, even if we believe that ethnic heterogeneity causes conflict, there is no theoretical basis to the supposition that ethnic divisions are best captured by an index of fractionalization. It is simply a readily available measure that produces the expected results for economic growth or public good provision.[28] When analyzing social conflict it becomes evident that fractionalization may not be suitable in numerous scenarios. On the one hand, as social diversity increases, there is an intuitive notion that the likelihood of conflict may actually decrease instead of increase. In order for a group to be viewed as a credible aggressor or opponent, it must achieve a certain minimum size. On the other hand, the fractionalization measure presupposes that all groups are positioned symmetrically against each other. It can be interpreted as saying that every pair of groups is "equally different." However, this is often not the case.[29] The polarization index provides an alternative perspective. As described in Section **??**, it seeks to quantify societal "antagonism," which is assumed to stem from two primary factors: the "alienation" experienced between individuals from distinct groups, and the degree of "identification" with one's own group.

The differences between fractionalization and polarization indices hold both conceptual and empirical significance. Montalvo and Reynal-Querol (2005), using the Q index, showed that ethnic polarization stands as a significant correlate of civil conflicts, whereas fractionalization does not. This contribution marks an important step in providing robust econometric evidence supporting the idea that "ethnic divisions" can impact conflict dynamics.

The previous contributions, however, while loosely based on theoretical arguments, are essentially empirically motivated in an attempt to identify a statistical regularity.

[28] See Easterly and Levine (1997).

[29] Indeed, several papers have emphasized from both a theoretical and an empirical point of view that ethnic "distance" matters for conflict. For instance, Desmet et al. (2012) find that deep divisions across ethnic groups, with origins dating back thousands of years are better predictors of conflict. Arbatli et al. (2020) contend that interpersonal population diversity, primarily established during the migration of humans from Africa tens of millennia ago, has played a crucial role in historical and contemporary civil conflicts. Their diversity metric leverages variations in genetic distances within the population, encompassing multiple facets of population diversity, including the proportional representation of ethnic groups, interpersonal diversity both between and within groups. Caselli and Coleman (2013) argue that ethnic distance serves as a tool to enforce group membership, as in highly different ethnicities it becomes more challenging for individuals from the losing group to seamlessly integrate themselves as members of the winning group, which increases the likelihood of conflict as an equilibrium outcome.

This procedure, however, might be deemed unsatisfactory. Theory is instrumental in elucidating *why* and under *what* conditions specific indices are pertinent in a given context. It not only aids in the selection of the most suitable indices for analysis but also can provide essential guidance for the interpretation of the results.

Despite their divergent performance in empirical studies, the fractionalization and the polarization indexes share a connection. In fact, they become equivalent when two conditions are met: (i) group identity plays no role, and (ii) individuals experience equal degrees of alienation from members of all other groups. It follows that the choice of which index to employ hinges on the specific nature of the problem under consideration. It depends on whether issues related to group identity, intergroup differentiation, or both are relevant. Group identification assumes greater importance when dealing with matters of public significance, where the collective well-being of the entire community is at stake. Intergroup differentiation becomes pertinent when the distinct cultural characteristics of various groups influence the policies they adopt, impacting the broader societal context. On the contrary, when social groups compete for economic benefits that go exclusively to the victors and exclude the losers, no one opponent's triumph holds more or less significance than any other, and therefore intergroup cultural distance becomes irrelevant.

These insights form the basis of the theory established by Esteban and Ray (2011a, hereafter referred to as ERa), which establishes a connection between ethnic divisions and conflict. We now provide a concise summary of this theory and discuss its empirical testing.

4.2. Ethnic divisions and Conflict: Theory and Empirics. The starting point in ERa is that one cannot fully grasp the connections between ethnic divisions and conflict without having conceptual arguments that clarify (i) what the pertinent definition of a "division" should encompass, and (ii) how this definition might be attuned to the underlying nature of the conflict. One of the theory's key contributions is its ability to acknowledge polarization and fractionalization as simultaneous drivers of conflict, offering a clear explanation of the conditions under which one measure becomes more explanatorily significant than the other.

Open civil conflict arises when an established social, political, or economic order faces challenges from an ethnic group(s). Involved groups engage in costly actions such as demonstrations, provocations, bombings, guerrilla warfare, or open combat

to enhance their chances of success. It's assumed that society is always in a state of conflict and they model the extent of this conflict, measured as the aggregate of the above-mentioned actions.[30] ER argue that a fundamentally important distinction must be drawn between a conflict that is over "public goods"—ideological or religious supremacy, or political power—and one that is over private goods, such as the capture of oil resources or mining revenues.

More specifically, consider a scenario with r groups in conflict, where two types of stakes or prizes exist. One type is "public", the individual payoff from which is undiluted by one's own group size. Examples are imposing its preferred norms of culture, enjoying political power, policy control, religious dominance, etc. Let u_{ij} be the payoff experienced by an individual member of group i if group j wins and imposes its preferred policy. It's presumed that $u_{ii} > u_{ij}$ and this induces a notion of "*distance*" across groups i and j: $d_{ij} = u_{ii} - u_{ij}$. The monetary equivalent of such public rewards, denoted as π, captures how much money individuals are ready to give up to bring the implemented policy "one unit" closer to one's own ideal policy.

The other prize type is "private," which includes material benefits from administrative or political positions, directed subsidies, biased allocation of public expenditures, access to resource rents, or simple loot. Privateness exhibits two characteristics: firstly, the spoils are divided among the winning group, making group size relevant for per-capita gains; secondly, the identity of the winner does not matter to the loser, unlike the 'public" case, as in case of defeat the losers don't get anything regardless of the winner's identity. Let μ represent the per-capita value of the private prize at stake.

Individuals in each group allocate their resources to influence the likelihood of success. Conflict, defined as the sum of these resources across individuals and groups, results. Winners share the private prize and enforce their preferred policies (the public prize), while losers must adhere to the policies of the victors. A conflict "equilibrium" describes the final outcome, adopting the game-theoretic tradition of referring to the non-cooperative solution as a Nash "equilibrium." This equilibrium represents a vector of individual actions, with each agent's behavior maximizing expected payoffs, encompassing not only economic returns but also non-economic gains like

[30] Therefore, the issue of conflict onset is not addressed. As discussed in Esteban and Ray (2008), the costs of open conflict may act as a deterrent. Thus, there might be a non monotonic relationship between conflict onset and the factors determining the intensity of conflict.

political power or religious dominance. The maximization of payoffs involves a balance between individual and group interests, influenced by factors including group cohesion within society. Formally, it's assumed that an individual assigns a weight of α to their group's total payoff in addition to their individual payoff.[31]

The population-normalized equilibrium intensity of conflict, denoted as C, can be approximated for large populations using the formula:

$$\frac{C}{\pi + \mu} \simeq a\Big[\lambda P + (1 - \lambda)F\Big], \tag{7}$$

where $\lambda \equiv \pi/(\pi + \mu)$ represents the relative publicness of the prize, F and P are the fractionalization and polarization indices, respectively, introduced in Section **??**. The inter-group distances d_{ij} embeded in P are derived from "public" payoff losses, and a is a measure of group cohesion, defined as the weight that individuals place on the total payoff of their group, in addition to their own payoff.

This equation underscores the critical role of theory in guiding meaningful empirical research. The theory simplifies complex data into two key indices, F and P, capturing different aspects of a country's ethnic composition. Additionally, the weights assigned to these distributional measures depend on prize composition and group commitment levels. Higher relative publicness (λ) reinforces polarization, while greater relative privateness reinforces fractionalization. Publicness of the prize is naturally associated with identification and alienation, linked to polarization. With public payoffs, group size matters because it influences both the number of beneficiaries and the extent of shared identification. Inter-group distances also play a role, as they impact how policies are interpreted by the eventual winner, affecting the concerns of the loser. The polarization measure P captures these aspects. On the other hand, in conflicts over private payoffs (e.g., money), any winner is equivalent to another for the loser, as long as their own group does not win. Measures based on differences in intergroup alienation become ineffective in this context. Moreover, with private payoffs, group identification matters less, as group size diminishes per-capita gains. In this scenario, fractionalization measures become more relevant. Finally, high group cohesion (a) amplifies the impact of both measures on conflict. In summary, the theory guides data collection efforts, emphasizing the importance of P and F indices and the significance

[31] ER consider a as given. See Sambanis and Shayo (2013) for a theory that endogenizes the process of identification with an ethnic group.

of group cohesion and prize characteristics. It provides specific guidance on how to incorporate data into equation (**??**) which informs the empirical analysis.

Empirical Evidence. Esteban, Mayoral and Ray (2012a, hereinafter EMR) analyze data from 138 countries spanning the years 1960 to 2008. Consistent with the theoretical model, the primary dependent variable is conflict *intensity*, which is assessed through two distinct measures. The first measure considers the death toll, utilizing data from the Uppsala Conflict Data Program and the Peace Research Institute of Oslo (UCDP/PRIO).[32] A second measure of conflict intensity employed is the Index of Social Conflict (ISC), calculated by the Cross-National Time-Series Data Archive. ISC offered a continuous measure of various forms of social unrest without fixed thresholds distinguishing "peace" from "war." It is composed of a weighted average of eight different indicators of internal conflict, including politically motivated assassinations, riots, guerrilla warfare, and more.

The study's primary independent variables were denoted as the indices F and P. These indices are computed based on the population sizes of different ethnic groups within each country and a proxy for intergroup distances. Demographic data on ethnic and ethno-religious groups were obtained from a dataset provided by Fearon (2003), which identified over 800 such groups across 160 countries. Intergroup distances were determined following the methodologies outlined in Desmet et al. (2010), which involved linguistic distance calculations between two groups. See EMR for definitions of all the variables and methods employed.

Table **??** summarizes the main empirical results. It proceeds in three steps. First (Columns 1 and 2), it examines the strength of the cross-country relationship between conflict intensity and the two indices of ethnic division, with additional control variables in place, including time and regional dummies. Ethnicity emerges as a significant factor associated with conflict, which sharply contrasts with the findings of previous studies. Both P and F consistently show a significant and positive relationship with conflict. The second stage (Columns 3 and 4) considers specifications that are closer to the complete model, where the distributional indices are interacted with country-specific estimates of the relative publicness λ of payoffs, denoted as Λ, akin to the approach outlined in equation (**??**). Notably, P interacted with Λ yields a

[32] It categorizes conflicts into three levels for every 5-year period and country: 0 for peace, 1 for low-intensity conflict (more than 25 battle-related deaths but less than 1000), and 2 for high-level conflict (more than 1000 casualties).

positive and highly significant result, as does F interacted with $1 - \Lambda$. Moreover, the level terms P and F are no longer statistically significant.

In the final stage (Columns 5 and 6), the full model is put to the test by augmenting the previous specification with an estimate of the extent of group cohesion a, denoted as A, independently computed for each country.[33] The results again show that the composite terms for P and F are significant, while the levels of ethnic F and P v remain statistically insignificant.

Interpreting the results: Instrumentalism versus Primordialism. The empirical findings offer valuable insights on several fronts. Firstly, they present compelling evidence that civil conflicts are linked to, and possibly motivated by, factors associated with public goods, such as political influence, rather than being solely driven by personal gains or financial incentives. Otherwise, only fractionalization would be significant, and polarization would not matter. Secondly, the introduction of interactions that incorporate relative publicness, as specified by the theory, leads to the disappearance of level-based distributional effects. This strongly indicates that ethnicity's significance does not solely originate from its intrinsic nature, as argued by primordialists. Instead, it becomes relevant when specific ethnic groups experience a deprivation of political authority or encounter substantial disparities in economic benefits. As a result, ethnic divisions are unveiled as strategic tools used to control access to political power or economic advantages for a particular segment of the population, aligning with instrumentalist theories.

4.3. Takeaways. Most within-country social conflicts often possess a strong ethnic or religious dimension. However, establishing a concrete empirical connection between existing ethnic divisions and the intensity of these conflicts is a distinct challenge. Since the concept of ethnic divisions is inherently multidimensional, it's crucial to develop a theoretical framework to identify the key dimensions of the ethnic distribution that drive conflicts. The results described in this section show that in large populations only two indices are needed to understand this relationship: polarization is key when conflicts revolve around public gains such as political power while fractionalization is critical when conflicts concern private gains like access to resource rents. Additionally, the theory provides guidance on how to combine these

[33]The level of group cohesion is proxied by exploiting the answers to a set of questions in the 2005 wave of the World Values Survey (WVS), see EMR for details. As a drawback, data was only available for 53 countries.

Variable	[1] PRIO-C	[2] ISC	[3] PRIO-C	[4] ISC	[5] PRIO-C	[6] ISC
P	***5.16 (0.001)	***19.50 (0.002)	-1.48 (0.606)	-16.33 (0.227)	-1.47 (0.701)	-23.80 (0.212)
F	*0.93 (0.070)	*3.56 (0.061)	0.76 (0.196)	0.31 (0.878)	0.87 (0.403)	-0.16 (0.710)
$P\Lambda$			***11.174 (0.003)	***61.89 (0.001)		
$F(1-\Lambda)$			*1.19 (0.097)	***10.40 (0.000)		
$P\Lambda A$					*12.65 (0.087)	***90.32 (0.010)
$F(1-\Lambda)A$					2.54 (0.164)	**13.15 (0.018)
GDPPC	**-0.34 (0.047)	***-2.26 (0.004)	*-0.36 (0.080)	***-3.02 (0.001)	-0.25 (0.375)	***-3.68 (0.007)
POP	***0.24 (0.000)	***1.14 (0.000)	***0.21 (0.001)	***1.30 (0.000)	*0.09 (0.166)	**1.29 (0.013)
NR	-0.27 (0.178)	-0.53 (0.497)	-0.00 (0.570)	0.00 (0.432)	**0.00 (0.011)	*0.00 (0.090)
MOUNT	0.00 (0.537)	0.02 (0.186)	0.00 (0.362)	*0.03 (0.061)	*0.01 (0.060)	**0.05 (0.020)
NCONT	***1.06 (0.001)	***4.55 (0.001)	**0.77 (0.026)	***4.28 (0.001)	***1.37 (0.004)	***5.89 (0.000)
POLITICS	0.18 (0.498)	0.29 (0.789)	-0.00 (0.328)	**-0.00 (0.026)	0.00 (0.886)	-0.00 (0.374)
LAG	***1.99 (0.000)	***0.46 (0.000)	***1.94 (0.000)	***0.44 (0.000)	***1.84 (0.000)	***0.40 (0.000)
CONST	-	0.90 (0.915)	-	9.19 (0.398)	-	15.40 (0.328)
(Pseudo)-R^2	0.35	0.43	0.36	0.44	0.40	0.43
Observations	1125	1111	1104	1090	447	443
Countries	138	138	138	138	53	53

Table 1. ETHNICITY AND CONFLICT. *Notes.* All specifications employ region and time dummies, not shown explicitly. *p*-values are reported in brackets. Robust standard errors adjusted for clustering have been employed to compute *z*-statistics. The dependent variable is conflict intensity, either measured using PRIO data (PRIO-C) or the ISC data, see the text for details. Columns [1], [3] and [5] are estimated by maximum likelihood in an ordered logit specification, and columns [2], [4] and [6] by OLS. GDPPC: log of gross domestic product per-capita; POP: log of population; NR: a dummy for oil and/or diamonds in Columns 1 and 2 and oil reserves per-capita (OILRSVPC) for columns [3]–[6]; MOUNT: percentage of mountainous territory; NCONT: non-contiguous territory, see text; POLITICS is DEMOC in columns [1] and [2] and the index PUB times GDPPC (the numerator of Λ) for the remaining columns; LAG: lagged conflict in previous five-year interval. See Esteban, Mayoral and Ray 2012b for details on the computation of Λ, A and POLITICS.

measures when conflicts involve elements of both public and private interests, about the role of social cohesion in conflict. Furthermore, it suggests an interpretation for the findings: ethnicity matters, not inherently as primordialists argue, but instrumentally

when ethnic markers are used to restrict political power or economic benefits to a subset of the population.

This concise review has not delved into several interesting questions that have also been examined by existing literature in this field. Following the establishment of a connection between ethnic heterogeneity and conflict, a natural question arises: which ethnic groups are more susceptible to becoming embroiled in conflicts? Various group characteristics come into play. To mention some examples, Mayoral and Ray (2022) focus on group size. They show that the nature of the contested resources is again key to understand this relationship: when the disputed resource is excludable or private in nature, *smaller* groups possess a stronger incentive to engage in conflict. Conversely, in cases where the dispute pertains to group-specific public resources, *larger* groups are more likely to be associated with conflict.[34] Michalopoulos and Papaioannou (2016) argue that the arbitrary division of African ethnic groups during European colonial rule, known as the "Scramble for Africa," has led to more intense and protracted civil conflicts, higher casualties, and a greater likelihood of conflict. Partitioned ethnic groups, then, are associated with a reduced cost of engaging in conflict, as neighboring countries frequently provide military, political, and economic support to their ethnic counterparts residing across the border. Arbatli et al. (2020) contend that a key driver for conflict is interpersonal population diversity, primarily established during the migration of humans from Africa tens of millennia ago. They propose a diversity metric that leverages variations in genetic distances within the population, encompassing multiple facets of population diversity, including interpersonal diversity not only *between* but also *within* groups. Their findings illustrate how population diversity contributes to the non-cohesiveness of society, manifested in heightened distrust, disparities in preferences for public goods and redistributive policies, as well as the level of fractionalization and polarization among ethnic, linguistic, and religious groups.

Finally, this section focuses on the role of ethnic divisions, overlooking the role of income disparities. In this regard, the literature summarized in this section is orthogonal to that discussed in Section **??**, which seeks to establish a connection

[34]The underlying intuition behind this assertion is straightforward. When the resource in question is private, its value per capita is influenced by the group's size, leading smaller groups to have a greater motivation to initiate conflict. On the other hand, when the resource is public, its per capita value remains unaffected by group size. Consequently, larger groups are more inclined to initiate conflict because their size grants them additional strength, increasing their probability of winning, all else being equal.

between economic inequality and conflict. But there's no need of considering one or the other. There exists a genuine possibility that the economically motivated conflicts find their expression across groups defined by other criteria, such as religion, caste, geography, or language. These markers can be strategically harnessed for economic and political purposes, even when the markers themselves have nothing to do with economics. The following section will shift its focus to exploring how the ethnic and income distributions may interact to precipitate conflict.

5. Ethnicity, Income inequality and conflict

We now consider that individuals vary not only in their group affiliations—such as ethnicity or religion—but also in their income levels. As in the previous section, our underlying assumption is that in the event of conflict, it will manifest along ethnic lines. Thus, we do not consider the complexities associated with the salience of class as opposed to ethnicity in conflict. For an in-depth discussion of this subject, please refer to Chapter XX in this Handbook.

Our focus revolves around two pivotal dimensions of economic inequality: inequality that occur *between* ethnic groups and inequality *within* ethnic groups. In this section, we provide a summary of the primary theoretical arguments that have been proposed to understand the relationship between ethnic inequality and conflict, as well as a concise overview of the existing empirical evidence in this area. It's important to highlight, however, that evaluating theories related to ethnic inequalities faces significant challenges due to data limitations. To effectively test these theories, information on individuals' ethnic affiliations and their economic outcomes is needed, but such data is typically difficult to obtain for a large number of countries. This limitation is especially pronounced when analyzing within-group inequality, as it requires data on the within-group distribution of income, rather than just centrality measures (like those used for between-group inequality).[35]

In the following we distinguish between the type of inequality (i.e., *between* or *within* ethnic groups), and the primary conflict dimension emphasized by the theory, whether

[35]Different approaches have been used to address these limitations, for a more detailed discussion of the advantages and disadvantages of these approaches, refer to Huber and Mayoral (2019).

it pertains to conflict onset or the continuation/intensity of conflict.[36] The literature on between-group inequality primarily focuses on its association with conflict onset, while within-group inequality has been more closely linked to the continuation and intensity of conflicts.

5.1. Between group inequality and conflict onset. Extensive research has established a connection between the initiation of conflict and between-group inequality, often referred to as *horizontal inequality* (HI).[37] Supporters of these theories contend that dismissing grievances and inequalities as causes of conflict is premature, and that the lack of evidence for the war-causing impact of inequality is largely due to researchers relying on individualistic measures of income differences instead of group-based ones (Stewart, 2008).

The argument posits that when a group experiences significant economic disparities compared to other groups, it becomes more prone to instigating conflict. Under this framework, the shared understanding of a group's collective well-being (grievance) and its group identity motivates a sufficient number of individuals within the group to engage in organized violence. This notion does not inherently contradict the vertical inequality theory: in order for the latter to incite rebellion, individuals must establish a sense of identification and solidarity with others in their socioeconomic class. Explanations based on horizontal inequality, however, emphasize that in most societies, factors such as social group distinctions—especially enduring markers like language and religion—are more likely to foster the kind of group cohesion that motivates individuals to risk their lives in rebellion (Gurr 1993; Østby 2013), even when they have the opportunity to free-ride. Following this rationale, inequalities that align with group divisions should be more likely to trigger rebellion than economic disparities between individuals.

For economically disadvantaged ethnic groups, the concept of relative deprivation plays a central role, as these groups have incentives to commence conflict in pursuit of resources, alleviating feelings of alienation and grievance (e.g., Cederman, Weidmann, and Gleditsch 2011, Cederman, Gleditsch, and Buhaug 2013, Stewart 2000, and

[36] As emphasized by scholars like Bazzi and Blattman (2014), the processes driving the onset and the continuation and intensity of conflicts are distinct, and overlooking this difference can lead to misleading conclusions regarding the link between inequalities and conflict.

[37] Horizontal inequality is often defined in a broader sense as "inequalities in economic, political, or social dimensions or cultural status between culturally defined groups" (Stewart 2008). In this review, however, we will focus exclusively on economic inequalities across ethnic groups.

Stewart 2002). The larger the income gap between these groups, the greater the potential reward and, consequently, the stronger the motivation for the less affluent group to engage in conflict (e.g., Acemoglu and Robinson 2000, Cramer 2003, and Stewart 2002). This only represents one side of the story concerning horizontal inequality and ethnic civil conflict, as the argument is symmetrical in nature. Relatively privileged groups can also be motivated to initiate conflict, their goal often being to preserve their power, maintain access to resources, etc. Wealthier groups may fear government expropriation of their wealth for redistribution, prompting them to engage in preemptive attacks or secession wars to reduce these threats. As Horowitz (1985, 249–50) notes, *"[...]advantaged regions usually generate more income and contribute more revenue to the treasury of the undivided state than they receive, leading them to believe they are subsidizing poorer regions."*

In sum, the main prediction of this theory is that both relatively affluent and economically disadvantaged groups are more likely to initiate conflicts, which establishes a link between horizontal inequality and the onset of civil wars (see, for instance, hypotheses H1a and H1b in Cederman, Weidmann, and Gleditsch 2011, p. 483).

A more recent strand of the literature has argued that the relationship between *"changes"* in horizontal inequality and conflict is more complex than previously assumed, and may not follow the expected patterns outlined by theories of horizontal inequality and conflict. Income can play a dual role: on the one hand, it may determine the stakes if a victory entails the potential expropriation of the opponent's resources. In this case, it's reasonable that larger income disparities across groups could increase the likelihood of conflict erupting. On the other hand, however, an increase in the income of a particular group could bolster its capacity to financially support militants. In such cases, it is possible that the narrowing of the income gap between two groups, rather than its widening, might trigger conflict instead. This argument is reminiscent of the "Thucydides's Trap" (Allison 2017), suggesting that when a disadvantaged group gains power and threatens to displace a ruling one, the likelihood of war increases. Along these lines, Mitra and Ray (2014)'s theoretical model predicts that when the income of a disadvantaged group is low, increasing it can reduce the risk of this group initiating violence. But the same model also suggests that such income increases may lead to heightened violence inflicted upon the disadvantaged group by more privileged groups who fear losing their advantages. This perspective is also

compatible with evidence indicating that economic modernization might encourage, rather than discourage, ethnic conflict (Tellis, Szayna, and Winnefeld 1997, Chua 2003). Adhvaryu et al. (2021) use African data to illustrate that the probability of conflict is low when the involved parties are impoverished (indicating low horizontal inequality), increases when one party is relatively wealthy and the other is poor, and peaks when both groups are affluent (again suggesting low horizontal inequality).

Empirical Evidence. Cross-country studies that employ summary indices of HI at the country level typically find a positive association between those indices and armed conflict (e.g., Østby 2008). When the analysis is conducted at the group level and the information contained in HI indices is unpacked, more nuanced results are found.

Research that examines ethnic group-level relative deprivation, measured as the relative difference between the estimated GDP per capita of disadvantaged groups and the average national GDP per capita, has typically uncovered a positive correlation with ethnic armed conflicts (e.g., Cederman, Weidmann, and Gleditsch 2011; Cederman, Gleditsch, and Buhaug 2013; Cederman, Weidmann, and Bormann, 2015). However, when the focus shifts to wealthier groups, the results become less conclusive. Cederman, Weidmann, and Gleditsch (2011) and Cederman, Weidmann, and Bormann (2015) identify statistically significant relationships in specific model specifications, but other studies indicate significant uncertainty about the existence of an independent relationship (Cederman, Gleditsch, and Buhaug 2013; Buhaug, Cederman, and Gleditsch 2014). Huber and Mayoral (2019), using a range of HI measures derived from survey data, similarly do not find robust evidence supporting the idea that inequality across groups is associated with the commencement of civil conflict.

In summary, group-level studies have consistently found evidence that poorer groups are more likely to initiate conflict, while the relationship between wealthier groups and conflict onset remains less clear. These findings are related with a broader literature that links poverty and conflict through mechanisms beyond grievances. This perspective suggests that economically disadvantaged groups, facing lower opportunity costs, may be more inclined to engage in conflict due to having less to lose by participating in rebellion (Collier and Hoeffler, 1998, 2004). Further research is needed to determine whether the connection between group poverty and conflict is driven primarily by grievances, lower opportunity costs, or a combination of both factors.

5.2. Within-group inequality and conflict intensity. The link between inequality within a group and conflict has stronger economic underpinnings than the grievance-based connection between conflict and between-group inequality. For a group to engage effectively in conflict it requires financial resources and labor, which includes fighters. Sustaining a high-intensity conflict involves at least two opportunity costs: the cost of contributing resources and the cost of contributing one's labor to the fight. Esteban and Ray (2011b), ERb hereafter, argue that within-group inequality reduces both of these opportunity costs simultaneously. When the poor within a group are exceptionally impoverished, they will require relatively small compensation for participating in the conflict. Conversely, when the rich within a group are very affluent, the cost of providing resources to fund fighters is relatively low.[38]

The former theory primarily focuses on the role of within-group inequality in fueling conflict after it has already begun. It does not directly address the relationship between conflict onset and income heterogeneity within the group, which can be more complex. While high within-group inequality may facilitate the mobilization of combatants, it could also deter conflict onset by encouraging negotiation and compromise by the government, particularly in situations where the potential for highly destructive conflict exists.

ERb provide examples from Africa, Asia, and Europe to illustrate the causal mechanisms in their theory. Fearon and Laitin (2000) also discuss instances in the literature on ethnic conflict where elites promote ethnic conflict, and combatants are recruited from the lower class to carry out violence. Examples include Bosnia (where "weekend warriors" sustained violence during weekends while working low-paying jobs during the week), Sri Lanka (gang members fighting on the Sinhalese side), and Burundi. Huber and Mayoral (2019) focus on the Rwandan genocide, which also serves as a good illustration of this argument. In the years leading up to the genocide, Rwanda faced economic crises due to droughts, collapsing coffee prices, and civil war. This crisis resulted in increased within-group inequality among the Hutu population (Verwimp, 2005), which in turn motivated elites to incite violence against the Tutsi minority. The campaign had a disproportionate impact on unemployed

[38]Within this group, the role of expatriate communities who earn significantly higher incomes abroad than they would in their home countries is significant. Several relevant examples illustrate this phenomenon, such as the financial support provided to the IRA by Irish citizens residing in the United States, the anti-Muslim Hindu activism in India, the various right-wing political activities across multiple countries financed by Iranian elites living in exile.

individuals and delinquent gang members in militias, who had the most to gain from engaging in conflict. Importantly, the campaign promised participants access to the property of the murdered Tutsi. Thus, economic conditions played a role in instigating and sustaining the conflict. All these examples suggest that a necessary condition for sustained ethnic violence is the availability of individuals, often young and economically disadvantaged, who can be mobilized by nationalist ideologues.

Empirical Evidence. Huber and Mayoral (2019) conduct a comprehensive study to test ERb's theory, utilizing new survey-based data to measure both between-group and within-group inequality. They find robust evidence of a strong association between within-group inequality, measured as the group-level Gini coefficient, and the intensity, as well as the incidence, of civil wars. They also observe that the link between within-group inequality and the onset of conflict is weaker. Kuhn and Weidmann (2015) construct a global measure of within-group economic inequality by integrating high-resolution satellite images of light emissions, spatial population data, and geocoded ethnic settlement areas. Their research yields evidence that supports the notion that within-group inequality is a significant catalyst for conflict.

5.3. Group-level income inequality and conflict: A summary. From the review of the existing literature, two distinct patterns come to the forefront. Firstly, there is ample empirical support for the idea that heightened levels of economic deprivation within ethnic groups are associated with an increased likelihood of armed conflict. The evidence, however, seems to be less conclusive when considering whether relatively privileged groups are inclined to engage in armed conflicts.

Secondly, among the more limited number of studies that have explored the impact of within-group inequality on conflict, a consistent pattern emerges, indicating a strong and meaningful relationship between these two variables.

In sum, although the impact of vertical inequality on conflict doesn't receive empirical backing, group-based inequalities seem to be important drivers of conflict. On the one hand, poorer groups are more likely to initiate conflict. On the other hand, economically unequal groups often have a greater capacity to engage in more intense conflicts. Hence, the significance of group-level inequality lies not only in creating grievances but more so in enabling the economic underpinnings of warfare. Therefore, efforts to reduce the severity of civil conflicts should prioritize situations where groups

have the greatest capacity to engage, with within-group inequality playing a crucial role.

6. Concluding Remarks

This paper has explored the relationships between economic and non-economic divisions within societies and their potential roles in driving internal conflicts. By examining both class-based and ethnic-based disparities, we have summarised the evidence that shows that social divisions, whether rooted in economic inequality or ethnic divisions, contribute to the likelihood and intensity of conflicts in diverse ways. While economic inequality alone does not robustly predict conflict, the intersection of income with group identity, as well as the cohesion within these groups, plays a crucial role in understanding the dynamics of conflict escalation.

The analysis reveals that polarization is especially significant in conflicts where public goods, such as political power or ideological dominance, are at stake. On the other hand, fractionalization becomes more relevant in conflicts driven by access to private resources. This highlights the importance of considering both economic incentives and group identity when analyzing conflicts. Moreover, the role of within-group inequality is critical, particularly in sustaining conflict intensity, as it lowers the opportunity costs for the economically disadvantaged while enabling wealthier members to finance such conflicts.

The empirical findings suggest that economic divisions between and within groups must be studied in tandem with non-economic cleavages to gain a more comprehensive understanding of internal conflict dynamics. In doing so, policymakers can better identify the root causes of conflict and tailor interventions accordingly. Future research should continue to refine the theoretical models and improve the data available on group-level disparities to better inform policy aimed at conflict prevention and resolution.

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