The inequality-conflict nexus re-examined: Income, education and popular rebellions

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Manuscript accepted for publication in the *Journal of Peace Research.* The final, definitive version of this paper has been published *Journal of Peace Research* 51(1), Jan/2014 by SAGE Publications Ltd, Link to the published version: doi: 10.1177/0022343313503179

Abstract

The impact of inequality on the outbreak of intrastate armed conflicts or civil wars has recently attracted considerable interest in conflict research. In contrast to previous studies that have focused on inequality in the total population (vertical inequality), recent studies have analysed inequality between certain groups of people (horizontal inequality), and found that inequality significantly increases the likelihood of conflict onset. However, most of the recent studies on the inequality-conflict nexus have focused on conflicts fought between ethnic groups. The relation between inequality and other (non-ethnic) categories of conflicts has attracted less attention. The present study aims to address this gap: it implements a theoretical and empirical analysis of the relation between inequality and popular rebellions, a subset of conflicts where mobilization transcends ethnic boundaries and hostilities involve popular participation. Based on a sample of 77 popular rebellions and new global data on inequality in income and education, this study shows that inequality significantly increases the likelihood of popular rebellion onset. In addition, the study reveals that inequality proxies (income and education Gini indices) outperform proxies of the absolute level of income (GDP per capita) in the model of popular rebellion onset, suggesting that it is relative, not absolute, well-being that ultimately motivates people to rise up in arms.

Keywords: income inequality, educational inequality, civil war onset, ethnic conflict, non-ethnic conflict, popular rebellion

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Introduction

Important developments have taken place recently in the study of intrastate armed conflicts or civil wars (hereafter conflicts). The renewed focus on the relation between inequality and outbreak of conflict is one of these (Østby, 2008). In contrast to previous research that has focused on the distribution of resources in the total population (vertical inequality), recent studies have focused on the distribution of resources among certain groups of people (horizontal inequality) (Stewart, 2002; 2008). The recent studies have found that inequality significantly increases the likelihood of conflict onset (Cederman, Weidmann & Gleditsch, 2011; Østby, 2008), a finding that stands in contrast to a number of previous studies that have largely dismissed the role of inequality in conflict (e.g., Collier & Hoeffler, 2004; Fearon & Laitin, 2003).

However, most of the recent studies of the inequality-conflict nexus have focused on conflicts fought between ethnic groups.[1] The relation between inequality and other (non-ethnic) categories of conflicts has attracted less attention. Non-ethnic and ethnic conflicts are almost equally common – out of 331 conflict onsets since the end of the Second World War, 144 were non-ethnic. Non-ethnic and ethnic conflicts are also almost equally protracted – on average, the former last four and a half years and the latter five and a half years. Finally, and perhaps most importantly, non-ethnic and ethnic conflicts are almost equally violent – 53% of non-ethnic conflicts and 51% of ethnic conflicts cross the threshold of 1000 battle-related deaths.[2] One could, therefore, argue that an exclusive focus on ethnic conflicts is not warranted.

The present study addresses this gap by analysing a global sample of popular rebellions – armed conflicts where mobilization transcends ethnic boundaries and hostilities involve popular participation. It employs two recently introduced and previously unexploited datasets on vertical income and educational inequality: the Standardized World Income Inequality Database (Solt, 2009) and the Data Set of Educational Inequality in the World, 1950–2010 (Benaabdelaali, Hanchane & Kamal, 2012). The study demonstrates that inequality significantly predicts popular rebellion onset. In addition, the study reveals that proxies of inequality consistently outperform

[1] Exceptions include Tadjoeddin, Chowdhury & Murshed (2012), who have analysed the relation between vertical inequality and *non-ethnic* routine violence. Several studies have also analysed the relation between spatial inequalities and conflict onset (Østby, Nordås & Rød, 2009) and intensity (Murshed & Gates, 2005).
[2] These numbers are based on Bartusevičius (2013) and include conflicts recorded in 1946–2010 (see the sub-section 'Outcome Variable').

proxies of the absolute level of income – the effect of GDP per capita becomes insignificant when income and educational inequality are controlled for in the model of rebellion onset. This finding challenges the widely-established 'opportunity' approach (Collier & Hoeffler, 2004) and corroborates the theory of relative deprivation (Gurr, 1970), suggesting that it is relative, not absolute, well-being that ultimately motivates people to rise up in arms.

The study proceeds as follows. The next section reviews previous research on the inequality-conflict nexus, elaborates on the concepts of popular rebellion and inequality, and describes potential mechanisms through which inequality leads to popular rebellion. The subsequent section presents the empirical analysis. The final section summarizes the main results and discusses their probable implications, followed by a conclusion offering suggestions for future research.

The inequality-conflict nexus

Does unequal distribution of resources increase the risk of conflicts? This question has worried conflict researchers ever since Bruce Russet published his *Inequality and Instability* (1964). The results of the early research on the inequality-conflict nexus were mixed: the studies found a positive relationship between inequality in income (or land tenure) and conflict (Nagel, 1976; Prosterman, 1976; Russet, 1964; Sigelman & Simpson, 1977), no relationship (Hardy, 1979; Weede, 1981, 1987), a negative relationship with conflicts most likely in egalitarian societies (Mitchell, 1968) and a concave (inverted-U) with conflicts most likely at intermediate levels of inequality (Nagel, 1974).

With the end of the Cold War, the focus of conflict researchers shifted to other variables such as ethnic diversity (Ellingsen, 2000), natural resources (Collier & Hoeffler, 2004), economic prosperity (Fearon & Laitin, 2003) and regime type (Hegre et al., 2001). Nevertheless, some studies in the 1990s and 2000s analysed the role of inequality as well. Once again, findings were mixed: Alesina & Perotti (1996) and Auvinen & Nafziger (1999) found a positive relationship between inequality and conflict, while Hegre, Gissinger & Gleditsch (2003) found no such relationship. On the whole, quantitative (aggregate) cross-country research has thus failed to establish a robust relation between inequality and conflict.

Meanwhile, case-based research has demonstrated that sharp inequalities have had a major

impact on the outbreak of a number of present-day conflicts (e.g., Booth, 1991; Stewart, 2008). Some scholars have argued that the non-findings of the cross-country studies are caused by methodological flaws such as measurement error, omitted variable bias or poor quality of inequality data (Lichbach, 1989; Sambanis, 2005). Further, previous research has mainly used proxies of inequality in the total population (i.e., vertical inequality), which does not necessarily overlap with inequality between particular groups:

> In practice, a country can have large income inequalities between groups (His), despite the fact that the overall (vertical) income inequality is rather low (as is the case in Rwanda), and vice versa; a country can have a high vertical inequality score, even though the structural differences between groups might be low (e.g. Brazil). Besides, a country can have both strong vertical and horizontal inequality at the same time (e.g. South Africa), or it can score low on both (e.g. Switzerland) (Østby, 2011: 9).

This suggests that vertical and horizontal inequalities potentially have non-uniform effects on ethnic and non-ethnic conflicts. Non-ethnic conflicts, unlike ethnic ones, transcend ethnic boundaries. Such conflicts often involve participation of non-ethnically differentiated masses whose share of resources is closely related to the overall distribution of resources, which – as stated above – does not necessarily apply to ethnic groups. Thus, as Sambanis puts it:

> There may exist a relationship between [vertical] inequality and popular revolutions or class conflict, which is another reason to consider disaggregating the cases of civil war. But ethnic or secessionist wars should, in theory, be driven more by group-based inequality (which I refer to here as horizontal inequality) than by interpersonal inequality. High levels of interpersonal inequality in all ethnic groups may actually reduce the ability to coordinate an ethnic rebellion as they can erode group solidarity (2005: 328).

In fact, Besançon (2005) has found that vertical *income* inequality is positively related to the onset of (non-ethnic) 'revolutions', but negatively to the onset of 'ethnic wars', while vertical *educational* inequality is negatively (though insignificantly) related to the former, but positively to the latter. This suggests that the study of the inequality-conflict nexus must consider the distinction between horizontal and vertical inequalities on the one hand and ethnic and non-

ethnic conflicts on the other. Recently, considerable attention has been focused on horizontal inequalities and ethnic conflicts (Cederman, Weidmann & Gleditsch, 2011; Østby, 2008), whereas the relation between vertical inequalities and non-ethnic conflicts has largely been neglected. The present study aims to address this gap – it implements an analysis of the relation between inequality and one particular (non-ethnic) category of conflict – popular rebellion.

Popular rebellions

Popular rebellions constitute a significant proportion of present-day conflicts.[3] The Salvadoran Civil War (1979–1992) is a good example of these. Like all (broadly-defined) intrastate armed conflicts or civil wars (Gleditsch et al., 2002), the rebellion in El Salvador involved domestic armed hostilities between politically organized actors, one of which was the government of a state, included effective resistance and resulted in certain number of battle-related deaths. What made this rebellion distinct from other categories of conflicts was (1) the composition of conflicting parties and (2) popular participation.

Unlike ethnic conflicts, the rebellion in El Salvador was not limited to particular ethnic groups – the rebels did not represent any specific religion or language. This suggests that conflicts like these are fought over issues that affect the whole (or significant parts of) society, not its particular segments – as is often the case in ethnic conflicts. For comparison, consider the conflict between Nationalists/Catholics and Loyalists/Protestants in the United Kingdom. The conflict was largely limited to the territory of Northern Ireland and involved hostilities between ethnically-defined actors. The conflict did not submerge the majority of British society and concerned specific issues related to the status of Northern Ireland and its Protestant and Catholic communities. In contrast, the conflict in El Salvador – in one or other form – engulfed significant part of the country's territory and involved participation of heterogeneous groups united in common struggle against the government.

Further, the rebellion in El Salvador, unlike a typical violent coup, was not limited to the elitist struggle among the incumbents and involved popular participation.[4] For contrast, compare this rebellion with the 1951 Manhattan Rebellion in Thailand. Whereas the former involved

[3] The term 'popular rebellion' is chosen to emphasize the distinctive attributes of the concept – non-ethnic mobilization and popular participation – and thus to distinguish it from violent coups and ethnic rebellions.
[4] Popular participation is often used as a main criterion to distinguish armed conflicts from violent coups (e.g., Powell & Thyne, 2011).

active popular participation, the latter was a 36-hour military confrontation between mutinied navy officers on the one hand and army and police officers sided with the government on the other (Fineman, 1997). Though a number of civilians were killed (due to an undisciplined use of force), the conflict was limited to the elitists struggle, and – unlike in El Salvador – involved no active popular participation.

Thus, using the rebellion in El Salvador as an illustration[5], we could define popular rebellion *as an intrastate armed conflict between two or more politically organized actors, one of which is the government of a state, where hostilities involve: (a) confrontation between members of the same ethnic group; (b) popular participation; (c) effective resistance; and (d) certain levels of violence.* [6] 'Popular participation' does not necessarily imply involvement of the whole population (nor does it imply a widespread popular support). Rather, it implies open participation of various socioeconomic groups (workers, peasants, students, etc.) in armed hostilities, whose members *played no direct role in the state apparatus during the period prior to the onset of conflict.*

Inequality

The fact that popular rebellions transcend ethnic boundaries and involve popular participation suggests that they are fought over issues that affect significant parts of societies, not their particular segments – vertical inequality (as opposed to horizontal inequality between particular groups) likely being one of these. Hereby, inequality is defined as *an unequal (asymmetric) distribution of certain goods within a given society*. The goods over which inequalities exist are defined broadly; they can include material assets (e.g., income or land), but also opportunities (e.g., to participate in politics) or access (e.g., to education, health or social services). The criterion for including a good in the definition employed in this study is its widely-acknowledged value and the possession/lack of which significantly influences individuals' socioeconomic status. This criterion helps to distinguish goods whose possession/lack is potentially linked to the individuals' predisposition to be involved in collective violence from those goods whose possession/lack does not influence such a predisposition (see below).

[5] Other examples of popular rebellions include the Guatemalan Civil War (1960–1996) or the Peruvian Civil War (1980–2000) (a full list is provided in an Online Appendix) (measurement issues are discussed below).
[6] Thus, the concept of popular rebellion is the concept of a broadly-defined intrastate armed conflict *with limited extension* (delimited by two additional, secondary level attributes – a and b) (Goertz, 2006). In other words, popular rebellion is just a sub-category of a broadly defined intrastate armed conflict.

This concept of inequality reflects the distribution of certain goods in the *total* population. Therefore, it primarily deals with *vertical* inequality. But indirectly, it also accounts for inequality between groups. Individuals possessing a comparable share of certain goods (such as income or land) typically form socioeconomic groups (or 'social classes'), which – like other social groups (e.g., ethnic groups) – share peculiar attributes such as geographic concentration and common social identity (characteristics that play important role in the mobilization of would-be rebels – a point I elaborate below). While vertical inequality in a country cannot directly account for the actual level of inequality between groups taking part in armed hostilities, it indicates the distance between the 'advantaged' and the 'disadvantaged', who typically represent different sides in non-ethnic conflicts (the government and the rebels).[7, 8]

What are the potential mechanisms through which inequality leads to popular rebellions? Previous literature has identified at least two of these. The first relates to the behaviour of solitary individuals ('the psychological mechanism') and the second to the formation and behaviour of groups ('the social mechanism').

The psychological mechanism

High inequality generates 'relative deprivation' (Gurr, 1970; Runciman, 1966). 'A person', Runciman writes,

> is relatively deprived of X when (i) he does not have X; (ii) he sees some other person or persons, which may include himself at some previous or expected time, as having X, (iii) he wants X, and (iv) he sees it as feasible that he should have X (1966: 10).

Such a discrepancy between one's wishes and capabilities could trigger aggressive response because of a psychological mechanism summarized in the 'frustration-aggression hypothesis' (Dollard et al., 1939: 1): 'the occurrence of aggressive behaviour always presupposes the existence of frustration' and 'the existence of frustration always leads to some form of

[7] As Lichbach notes: 'Conflict protagonists in a society are often divided into two groups: the challenging groups, i.e., the have-nots or the disadvantaged, who seek economic equality by attacking the status quo distribution of resources; and the established groups, i.e., the haves or the advantaged, who perpetuate economic inequality by defending the status quo distribution of resources' (1989: 432).

[8] Nevertheless, inequality in the total population is only treated here as a *proxy* of the inequality between conflicting parties – which, in some cases, may not accurately account for the actual inequality between them.

aggression'.[9] Frustration is here defined as 'an interference with the occurrence of an instigated goal-response at its proper time in the behaviour sequence' (Ibid.: 7) and aggression as 'sequence of behaviour, the goal-response to which is the injury of the person toward whom it is directed' (Ibid.: 9).

Needless to say, deprivation of certain goods does not necessarily lead to frustration in every individual. The chance of frustration depends on the value one attaches to the good one is deprived of. Thus, frustration is only likely when individuals are deprived of widely-acknowledged and highly valued goods or, as Gurr states, 'goods and conditions of the life to which they believe they are justifiably entitled' (1968: 1104). Likewise, the presence of frustration does not necessarily lead every individual to respond aggressively. The chance of aggression depends on intensity of frustration – the more intense the frustration, the higher the likelihood of aggressive response: 'men who are frustrated have an innate disposition to do violence to its source in proportion to the intensity of their frustrations' (Gurr, 1970: 37). Intensity of frustration depends on the value attached to the good one is deprived of and on the scale of the deprivation itself. The scale of the deprivation (the distance between the disadvantaged and the advantaged in respect of possession of certain goods) must be sufficiently large to result in frustration intense enough to predispose one to commit violence.

The social mechanism

Individuals whose goals (they think they are rightfully entitled to) have been blocked are predisposed to commit violence. The chance of violence rises as the deprivations increase. Not only because of the intensity of the frustration itself, but also because of the increase in the strength of the sense of 'we-ness'.

'We-ness' (or social identity) refers to 'social categorizations of self and others, self-categories that define the individual in terms of his or her shared similarities with members of certain social categories in contrast to other social categories' (Turner et al., 1994: 454). The social groups around which 'we-ness' develops are often described in terms of 'race', language or religion. But it may also develop around other attributes such as share of income, occupation

[9] This statement was later amended by Miller (1941). He noted that the frustration-aggression link should not be understood in deterministic terms – frustration does not necessarily lead to aggression, and aggression is not necessarily the only response to frustration. For further elaboration of the frustration-aggression hypothesis, see Rummel (1977). For an updated version of the hypothesis, see Berkowitz (1989).

or – more broadly – 'social class'[10] (Jackman & Jackman, 1983; Wright, 1997).[11] Indeed, 'class has a subjective meaning that transcends the economic sphere and incorporates factors normally associated with status groups' (Jackman & Jackman, 1983: 41). This is not surprising since members of socioeconomic groups – just like members of ethnic groups – tend to live around, form social networks with and marry members of the same socioeconomic group (Argyle, 1994: 66–92).[12]

Social identity, therefore, is not only relevant in the context of ethnic conflicts but also in the context of conflicts involving socioeconomic groups. It is relevant because it facilitates mobilization of solitary individuals for collective action by increasing commitment and solidarity among members of the same group (Hunt & Benford, 2004: 448). This in turn reduces the likelihood of free riding and helps to overcome the collective action problem (Olson, 1965) – a major obstacle in collective actions such as armed rebellions, where participants are exposed to high risks. Indeed, case studies suggests that party activists, union workers, 'revolutionaries' – whoever took the organizational role[13] – used socioeconomic statuses of peasants, landless workers, working-class, etc., as mobilizational devices in a number of rebellions (e.g., Booth, 1991).

The stronger the social identity, the easier it is for leaders to mobilize the group's members for collective action (Gurr, 2000: 66; Van Zomeren, Postmes & Spears, 2008). The strength of the social identity significantly depends on the extent of collective grievances (Gurr, 2000: 68), which, in turn, depends on the extent of inequalities: the higher the inequality, the stronger the grievances.

This discussion thus suggests a linear relationship between inequality and onset of popular rebellion: the higher the inequality – the higher the individuals' predisposition to commit

[10] Class identity is 'the ways in which people consider themselves "members" of different classes…it constitutes one of many ways in which people define what is salient about their lives and what differentiates them from others…it is rooted in one's personal history and in the ways in which that personal history is tied to the history of communities and social groups (Wright, 1997: 495).

[11] It is commonly assumed, however, that ethnic identities are stronger that the socioeconomic ones (Smith, 1991: 1–18; McPherson, Smith-Lovin & Cook, 2001), which potentially explains why ethnic conflicts are somewhat more common that the non-ethnic ones.

[12] It is important to note that the concept of 'class' and 'class identity' has been challenged in sociology – see, most notably, Pakulski & Waters (1996). For an overview of recent debates on class identity, see Bottero (2004) or Crompton (2008).

[13] I acknowledge the central role leadership plays in mobilization processes (Gurr, 2000: 78–79); I bypass, however, this factor in this study, as my focus on the state-level factors precludes empirical analysis of individual characteristics. On the other hand, I suggest that social identity, itself – irrespective of the leadership characteristics – constitutes a mobilizational advantage, which makes rebellions more likely.

violence; similarly, the higher the inequality, the higher the likelihood of successful mobilization of solitary individuals for collective action. Thus,

H1: The higher the inequality, the higher the risk of popular rebellion onset, ceteris paribus.

Obviously, popular rebellion is not the only possible outcome of sharp inequalities. Popular rebellion only represents an extreme on a scale that includes other, 'more moderate' responses such as demonstration or protest. But popular rebellion certainly remains an option in the repertoire of the disadvantaged as long as inequality results in intense resentment and the distance between the disadvantaged and the advantaged remains large.

Likewise, inequality is not the only possible cause of popular rebellion. Rebellions, just like other types of collective action, depend on a number of other variables and contextual factors. Yet, inequality – as the theory suggests – is certainly one of the viable causes or (at least) contributing variables to the onset of violence directed towards the source of inequality, and the higher the inequality, the higher the chance that it develops into violent collective action.

It is likely, however, that inequality – at high levels – may have opposite effects. Initiation of conflict significantly depends on the would-be rebels' chances of success, which depends on the estimation of the would-be rebels' strength vis-à-vis the government (Hendrix, 2010: 274). Would-be rebels' strength vis-à-vis the government, in turn, depends on the levels of inequality, as inequality often benefits those in control of government and disadvantages those willing to rebel (see fn. 7). The more well-off the government, the higher its ability to recruit, equip and retain soldiers, and, conversely, the more well-off the would-be rebels, the higher their ability to recruit, equip and retain fighters. Thus, inequality, at high levels, regardless of the intensity of the discontent and strength of 'we-ness', may lead to inactivity on the part of the disadvantaged, as military confrontation with a state could be deemed too costly (see also Mitchell, 1968).

In addition, social psychological research has suggested that peoples' tendency to compare themselves with others decreases as the perceived differences between themselves and the reference individuals (or groups) increase. In his seminal work on social comparison, Festinger writes:

A person does not tend to evaluate his opinions or his abilities by comparison with others who are

> too divergent from himself. If some other person's ability is too far from his own, either above or below, it is not possible to evaluate his own ability *accurately* by comparison with this other person. There is then a tendency not to make the comparison (Festinger, 1954: 120).

While Festinger's 'similarity hypothesis' has been challenged in subsequent research (showing that people *do* sometimes compare themselves with 'different others'), peoples' comparison with 'similar others' has been found to have a *much stronger impact on their self-evaluation* than comparison with 'different others'.[14] As Crosby points out, 'the wages of manual workers are more important in determining whether or not miners feel entitled to a pay increase than are the salaries of white-collar workers (1976: 95). Thus, inequalities – at high levels – may not necessarily lead to higher levels of relative deprivation, as people may simply stop comparing their own socioeconomic position with the 'different others' as the gap between the two gets too large.[15]

The two arguments, then, lead to the following hypothesis:

H2: The relationship between inequality and popular rebellion is concave (inverted-U), ceteris paribus.

Empirical analysis

Outcome variable

The hypotheses were tested in a standard country-year logit regression analysis covering 1961–2009. The sample included all annual observations of states as defined by Gleditsch & Ward (1999). The data on the outcome variable was taken from the Categorically Disaggregated Conflict dataset (CDC) (Bartusevičius, 2013). The CDC classifies conflicts into four categories: 1) ethnic governmental, 2) ethnic territorial, 3) non-ethnic governmental and 4) non-ethnic territorial. This study employed category 3 as a proxy of popular rebellions. Category 3 includes

[14] For an extensive overview of the subsequent research and experimental evidence on Festinger's similarity hypothesis, see Wood (1989, especially pp. 233–238). For a more recent overview of research on social comparison see Suls, Martin & Wheeler (2002).

[15] Nagel (1974) was first to apply Festinger's similarity hypothesis in the study of rebellions. He has found empirical support for an inverted-U relation between inequality in landholdings and support for rebellion in South Vietnam (however, he found no support for the inverted-U relation between inequality and political instability in a cross-national setting).

all conflict onsets listed in UCDP/PRIO Armed Conflict Dataset v.4-2013, 1946 – 2012 (Gleditsch et al., 2002; Themnér & Wallensteen, 2013)[16] *that were*: (a) fought between members of the same ethnic group[17] (b) and concerned government. The CDC contains 124 onsets of non-ethnic governmental conflicts recorded in 1946–2009. As the time span of the present study was restricted to 1961–2009, 24 cases of popular rebellions were dropped. Subsequently, the analysis dropped 23 cases of non-ethnic governmental conflicts as cases of violent coups/coup attempts.[18] The empirical analysis thus encompassed 77 onsets of popular rebellions (see the Online Appendix for a full list).

Predictor variables

Inequality was proxied by two indices representing the distribution of income and educational attainment in the total population: the Gini Index of Net Income Inequality (t-1) (hereafter *income Gini*) and the Gini Index of Educational Inequality (t-1) (*education Gini*) (the two indices were taken from the datasets described below). The Gini index represents the difference between the 'ideal' cumulative distribution of certain resources – where every person gets the same share of the resources – and the actual distribution of the resources. It is estimated as the ratio of the area bounded by the Lorenz curve (representing the actual cumulative distribution of the resources) and the diagonal line of equality (representing the 'ideal' cumulative distribution of the resources) to the whole area under the line of equality. The values of the indices range between 0 and 1, 0 indicates a perfect equality and 1 – a perfect inequality. *Income* Gini thus

[16] Note, therefore, that the CDC employs the UCDP/PRIO definition of intrastate armed conflict ('a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths' (Themnér, 2013: 1)) as a base for the definition of the non-ethnic governmental category.

[17] The CDC classifies 'ethnic groups' on the basis of 'race', language and religion. Therefore, the non-ethnic governmental category includes conflicts that were fought between members of the same 'race', language *and* religion. For further details on coding of ethnic/non-ethnic categories in the CDC (2013) see the Online Appendix.

[18] Following the conceptual framework introduced above, I used popular participation as an operational difference between popular rebellions and violent coups. Thus, conflicts limited to the *elitist struggle within the state apparatus* were treated as coups, and conflicts involving popular participation as popular rebellions. I have not applied any numeric threshold for popular participation; therefore, analysis includes several 'borderline' cases (e.g., Government of Bolivia vs. National Liberation Army, ID: 1), where popular participation was limited (from several dozens to hundreds of individuals). The analysis also includes several cases of sectarian conflicts (e.g., Government of Nigeria vs. Boko Haram, ID: 100). These cases could not have been excluded without additional ad hoc coding rules. Note that sectarian conflicts and rebellions with limited popular participation constitute only a small fraction of cases in the sample – the vast majority were political in nature and involved extensive popular participation. Including coups or removing cases with limited participation or sectarian conflicts does not significantly affect the results of this study.

represents inequality in the net income in the total population and *education* Gini inequality in the educational attainment (proxied by schooling years) in the total adult population (age 15 and above). For further details on the construction of the indices see the original sources described below.

While these indices capture only part of inequality, they represent inequality in goods whose value is almost universally acknowledged and whose possession, in most cases, has a major impact on individuals' socioeconomic position, making these indices particularly suitable to proxy for goods whose unequal distribution is likely to be linked to intensity of resentment and strength of 'we-ness' among the disadvantaged.

Data for the indices was taken from two recently introduced datasets: the Standardized World Income Inequality Database (Solt, 2009) (hereafter SWIID) and the Data Set of Educational Inequality in the World, 1950–2010 (Benaabdelaali, Hanchane & Kamal, 2012) (DEIW). [19] The datasets substantially improve previous time-series cross-sectional data on inequality. SWIID encompasses 173 countries – the largest sample of countries included in publicly available datasets on income inequality. For example, Deininger & Squire (1996) (hereafter DS) – the most commonly used data source within conflict literature (Besançon, 2005; Collier & Hoeffler, 2004; Fearon & Laitin, 2003; Hegre, Gissinger & Gleditsch, 2003) – includes only 138 countries. Even its update, the World Income Inequality Database (WIID) (UNU-WIDER, 2008), encompasses significantly fewer (159) countries than SWIID. SWIID also has a larger time span than the other datasets (1960–2009 compared to 1960–1996 in DS[20] or 1960–2006 in WIID). The number of observations in SWIID exceeds 4500, almost twice the number of observations in DS (1996).[21] Finally, and perhaps most importantly, SWIID contains standardized observations for maximum comparability across countries. Whereas DS's (and WIID's) observations are estimated based on different concepts of income (net, gross, household, individual, etc.)[22], SWIID's observations are estimated using a common point of reference (see Solt, 2009, for details on the data standardization), making the data particularly suitable for cross-country comparisons.

[19] To my knowledge, neither of these datasets has been used in previous large-N studies of conflict onset.
[20] The full time span in DS is longer (1890–1996), but the vast majority of observations are only available for 1960–1996.
[21] Note that out of more than 2600 observation in DS's dataset, only 682 meet the standard (set up by the authors themselves) of 'high-quality'
[22] See Atkinson & Brandolini (2001) for critical evaluation of DS's dataset, which can also be extended to WIID.

The data for education Gini was taken from DEIW. Like SWIID, DEIW outperforms previously introduced datasets on educational inequality. It is based on Barro & Lee's (2010) most recent version and contains time-series cross-sectional data on the distribution of educational attainability in the total population of 146 countries for 1950–2010. For comparison, consider Thomas, Wang & Fan (2003), the second best data source on educational inequality in terms of coverage and time span, which encompasses 140 countries for 1960–2000, or Castello & Domenech (2002) – the only data source on vertical educational inequality previously employed in the conflict literature (Besançon, 2005) – which contains observations for just 108 countries for 1960–2000. The data in DEIW is quinquennial. To adjust it to the country year regression (see below), I linearly imputed annual observations with 'ipolate' command in Stata. Thus, the final dataset contains 6200 observations for the period 1961–2009.

Control variables

The analysis aimed to isolate the effect of inequality proxies on the outcome variable and *not* to identify variables explaining most of the variation in the outcome variable. Therefore, the main model was largely limited to the set of variables that were likely to be related to both inequality and popular rebellion (i.e., likely confounders): regime type, the absolute level of income and economic growth.

The relationship between inequality and popular rebellion could be confounded by regime type. Democratic countries typically enjoy higher development levels (Boix & Stokes, 2003) and have less income inequality than non-democratic countries (Muller, 1995). It has been argued that democratic countries are also less likely to experience conflicts (Gurr, 2000). To control for regime type effects, I introduced xpolity scores (t-1) (Vreeland, 2008) transformed to a positive 14-point scale (hereafter *xpolity scores*).

Economic literature has also suggested that relationship between regime type and inequality could follow the pattern of an inverted-U (Acemoglu & Robinson, 1998). The inverted-U relationship between regime type and conflict is also suggested in the conflict literature (Hegre et al., 2001). To capture the likely non-linear pattern between regime type and popular rebellion, I introduced xpolity scores squared (*xpolity scores^2*).

Further, economic literature has suggested that income inequality is negatively related to the

absolute level of income and economic growth (Deininger & Squire, 1998; Ravallion, 1997).[23] Conflict researchers have also shown that the absolute level of income and economic growth are negatively related to the outbreak of conflicts (Hegre & Sambanis, 2006; Miguel, Satyanath & Sergenti, 2004). To control for likely spuriousness, I introduced a natural log of GDP per capita (t-1) (*GDP per capita*) and GDP per capita growth (t-1) (*GDP per capita growth*). Data on GDP per capita was taken from Maddison (2010).

Finally, following standard practice (e.g., Hegre & Sambanis, 2006), I controlled for *population size* (ln) (with data from the National Material Capabilities dataset (v.4.0) (Singer, 1987))[24] and time dependency using *peace years* with a decay function ($e^{(-peace\ years/x)}$).[25]

Table I in here

Results

Table II presents the logit regression estimates. As shown in Model 1.1, income Gini significantly affects popular rebellion onset when other variables are not controlled for.[26] The same is true for education Gini (Model 1.2). The subsequent model includes income Gini and education Gini in one block. The two indices are moderately correlated (r = .40) suggesting a possible overlap in their effect on the outcome variable. Yet, as shown in Model 1.3, the effect sizes of the two indices remain almost unchanged, though the p-values slightly increase (from .027 to .079 for income Gini and from .001 to .003 for education Gini). Models 1.4 and 1.5 indicate that regime type proxies have virtually no confounding effect on the relation between inequality indices and popular rebellion onset. The same is true for GDP per capita and GDP per

[23] Note that the link between inequality, the absolute level of income and economic growth is highly debated in the economic literature, with some researchers arguing exactly the opposite – that is, that inequality *positively* affects economic growth (e.g., Forbes, 2000).

[24] As the data on population size in Singer (1987) is limited to 2007, Missing observations for 2008 and 2009 were linearly extrapolated using 'ipolate' command (with 'epolate' option) in Stata.

[25] *Peace years* stand for the number of years since the last conflict (or 1946). X determines the rate of decay. Following Hegre et al. (2001), X was set to 4, which halved the effect of the peace years with every additional three years in peace. As onset of popular rebellion potentially depends on *any kind* of previous conflict (e.g., because of 'the legacy of weapon stocks' (Collier & Hoeffler, 2004:569)), I used peace years since conflicts of all categories listed in the CDC.

[26] 'Significant' refers to estimates significant at least at the 10% level.

capita growth (the p-values for income and education Gini in the full model (1.7) amount to .053 and .051, respectively).[27]

Table II in here

Interestingly, the effect of GDP per capita – one of the most robust predictors of (aggregate) conflict (Hegre & Sambanis, 2006) – is highly insignificant (p = .850). This finding suggests that inequality indices confound the GDP per capita effect on popular rebellion. Indeed, the p-value for GDP per capita in the full model drops to .306 when income Gini is removed from the block, and to .118 when both income Gini and education Gini are removed from the block.[28]

To test the non-linear hypothesis, I regressed quadratic terms, *income Gini^2* and *education Gini^2* (Models 1.8b and 1.9b). The quadratic term of income Gini has an expected negative sign, but the estimate is insignificant (p = .143). In contrast, the quadratic term of education Gini is significant (p = .040),[29] suggesting that the relation between educational inequality and popular rebellion is indeed non-linear – an issue I return to below.

To assess the robustness of these estimates, I performed a number of additional tests. SWIID and DEIW contain a number of missing observations,[30] which (combined with missing data on control variables) could significantly have affected the estimates. In an attempt to address this, I imputed missing data on all predictor variables with the multiple imputation software *Amelia II* (Honaker, King & Blackwell, 2011) and performed the same regression once again (Table III).[31, 32]

Table III in here

The results based on the imputed data are largely in line with the previous estimates: while the

[27] In addition, I tested for interaction between GDP per capita growth and the inequality indices, but found no significant effects (not reported here).
[28] When I use imputed data the corresponding p-values drop to .327 and .036.
[29] Note that the coefficient for the linear term of education Gini is insignificant in Model 1.9a. This coefficient, however, becomes significant in an identic model based on imputed data (2.9a).
[30] ~45% and ~17% respectively (see Table I).
[31] For details on the imputation model and imputation diagnostics see the Online Appendix.
[32] Multiple imputation cannot substitute complete datasets; yet, it can (and, under general conditions, does) outperform listwise deletion (King et al., 2001).

effect sizes of the inequality proxies in some models (2.3–2.7) are noticeably smaller, the p-values throughout all models follow almost an identical pattern.[33]

Further, I tested the robustness of the estimates using alternative coding of the dependent variable (a. including coups, b. excluding cases with limited popular participation, c. excluding cases of sectarian conflicts, see fn. 18) – and found no significant changes. The results of the robustness tests are reported in the Online Appendix.

Discussion

What specific implications could these results have? First and foremost, the results demonstrate that inequality in income and education significantly affect popular rebellion onset. As suggested by H1, the relation between income inequality and popular rebellion is linear – the higher the income inequality, the higher the likelihood of popular rebellion. In contrast, the relation between educational inequality and popular rebellion is non-linear. Yet, in disagreement with H2, this relation follows the shape of an inverted-J (not an inverted-U). As can be seen in Figure 1, the risk of popular rebellion increases linearly for most (75%) of the education Gini values.

Figure 1 in here

The findings of the present study thus stand in contrast to Besançon (2005), who – as mentioned above – found that educational and income inequality have opposing effects on 'revolutionary' and 'ethnic wars'. Using substantially expanded data, this study finds that effects of income and educational inequality (on popular rebellions) largely go in the same direction.

Does the fact that education Gini, at extreme values, affects popular rebellion in an opposite direction support the 'relative strength' and 'social comparison' arguments presented above? The answer is most likely no, as rebels' strength vis-à-vis the government, on the one hand, and peoples' tendency not to compare their socioeconomic position with 'different others', on the

[33] The only noticeable differences are reported in Models 2.6 and 2.7, where p-values for education Gini drop marginally below the level of significance (.110 and .112 respectively).

other, should be more a function of inequality in material goods (such as income) rather than inequality in schooling years; yet, as indicated in the models based on both original and imputed data – income inequality affects popular rebellions linearly.

The finding that the risk of popular rebellion drops when educational inequality reaches extreme levels is more likely a consequence of too low levels of education among the disadvantaged themselves. Educated people may be more aware of social injustice and thus be more aggravated by their implications (Berrebi, 2007: 8). Education may also strengthen peoples' sense of social responsibility and civil engagement (Ibid.), which in turn may facilitate their mobilization. Hence, a certain minimum level of education may be needed for people to become aware of (and resented over) their disadvantageous position, which, in turn, is needed for collective action. Further research, however, is necessary to assess these considerations.

Second, the results indicate that the relation between inequality and popular rebellion is largely independent of regime type, the absolute level of income and population size. This suggests that inequality has a non-spurious effect on states' proneness to popular rebellions. While inequality could ultimately be rooted in one of these factors (e.g., Boix, 2009), the immediate effects of inequality seem to outperform the immediate effects of regime type, the absolute level of income and population size.

Finally, the findings indicate that distribution of income plays a more important role in popular rebellion onset than the absolute level of income. This, in turn, suggests that would-be rebels' decision to join a rebellion may depend on their relative and not on their absolute level of income. In their path-breaking study, Collier & Hoeffler have suggested that it is not grievances over economic inequalities, political repression or ethnic discrimination that play the crucial role in conflict onset – rather it is *opportunities*:

> Misperceptions of grievances may be very common: all societies may have groups with exaggerated grievances. In this case, as with greed-rebellion, motive would not explain the incidence of rebellion. Societies that experienced civil war would be distinguished by the atypical viability of rebellion (2004: 564).

One such opportunity is a large pool of potential recruits. The size of this, the argument goes, depends on the absolute level of income. Potential rebels with a low income (in absolute terms)

are more willing to join a rebellion than those with a high income because of lower opportunity costs: the former have less to lose than the latter. Thus, Collier & Hoeffler have hypothesized that states with low absolute income have higher chances of rebel mobilization and, in turn, higher risks of conflicts. Yet, the results of the present study indicate that low-income states are not significantly more prone to popular rebellions than high-income states, when controlled for distribution of income, regime type and population size. In contrast, the results show that states with a highly skewed distribution of income are significantly more prone to popular rebellions than those with a more equal distribution of income, when controlled for the absolute level of income, regime type and population size. These findings thus suggest that what may ultimately motivate people to rise up in arms is not lower opportunity costs (as proxied by GDP per capita), but grievances over unequal distribution of income (as proxied by income Gini) (Gurr, 1970).

Conclusion

Recent research on the inequality-conflict nexus has mainly focused on conflicts fought between ethnic groups. The relation between vertical inequality and non-ethnic conflicts has attracted less attention. This study has attempted to address this gap by implementing an analysis of the relation between vertical inequality and popular rebellions, armed conflicts where mobilization transcends ethnic boundaries and hostilities involve popular participation. The study has shown that vertical inequality proxies – income and education Gini indices – significantly predict popular rebellion onset. Furthermore, the study has revealed that GDP per capita – one of the most robust predictors of (broadly-defined) conflict– fails to account for popular rebellion onset when inequality proxies are controlled for.

Based on the theoretical discussion and empirical results, this study offers three broad suggestions for conflict research. First, conflict researchers should not disregard vertical inequality as one of the potential sources of present-days conflicts. While this has largely been the case, specified tests based on improved data suggest that vertical inequality could be as important a predictor of non-ethnic conflicts as horizontal inequality of ethnic ones.

Second, conflict researchers should consider that vertical and horizontal inequalities play different roles in ethnic and non-ethnic conflicts. This idea potentially explains why previous research on the inequality-conflict nexus has failed to find a robust relation between vertical

inequality and an aggregate category of conflict (i.e., including both, ethnic and non-ethnic conflicts). Therefore, further research on the inequality-conflict nexus should consider disaggregating ethnic conflicts and non-ethnic conflicts into two separate categories.

Finally, conflict researchers should take into account the possibility that the well-established relation between GDP per capita and risk of conflict could be confounded by the distribution of income. While the results are not yet conclusive, it seems that the measure of the distribution of income largely outperforms the measure of the absolute level of income in the models of popular rebellion onset. Thus, further studies should consider controlling for the distribution of income whenever the role of the absolute income in conflict is analysed.

Replication data

The empirical analyses were conducted in Stata 11.2. The replication data for the empirical analysis in this article can be found at http://www.prio.no/jpr/datasets.

Acknowledgments

I thank Derek Beach, Halvard Buhaug, Scott Gates, Kristian Skrede Gleditsch, Nils Petter Gleditsch, Tomas Janeliūnas, Mansoob Murshed, Gudrun Østby, Svend-Erik Skaaning, two anonymous reviewers, and the editor for helpful feedback on earlier versions of this paper.

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Figures

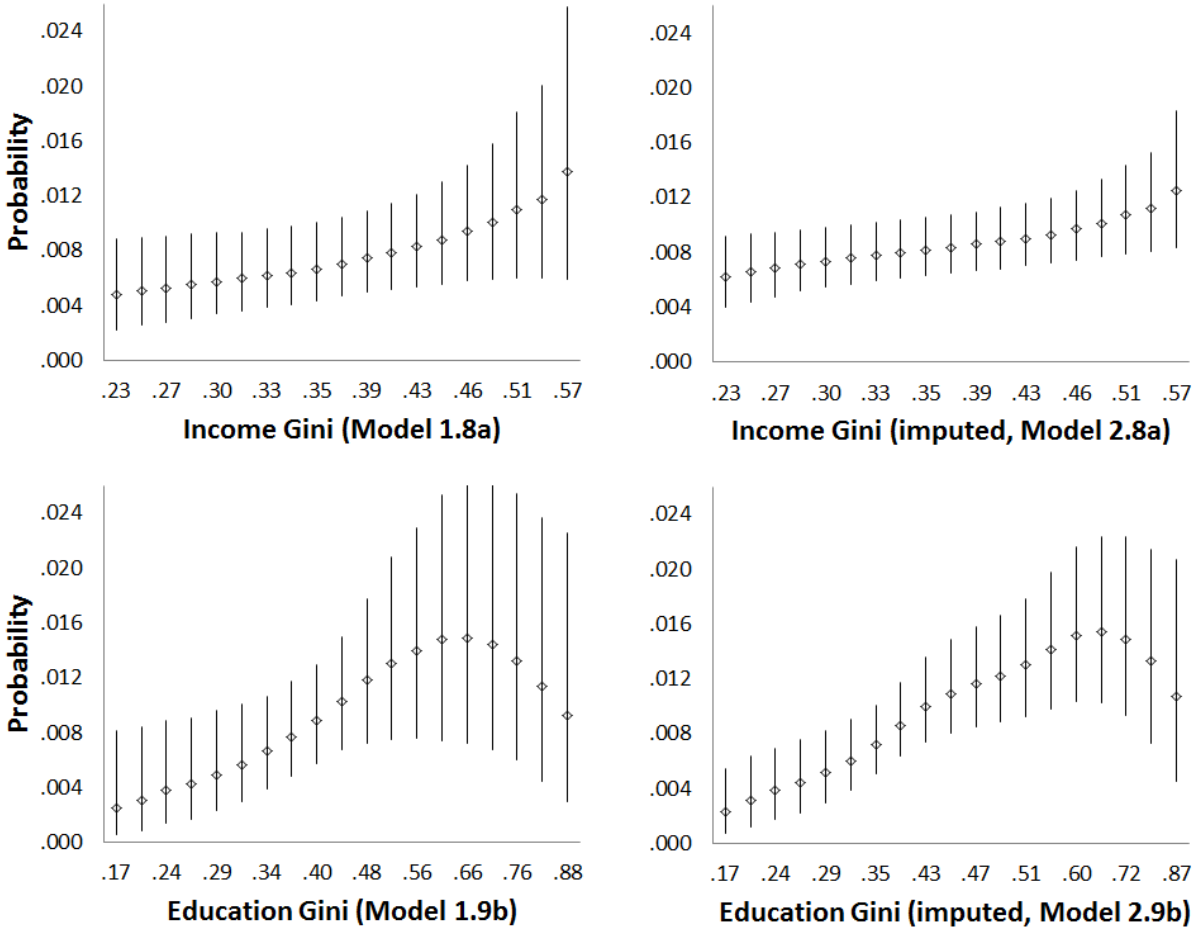

Figure 1. Estimated probabilities (with 95% confidence intervals) of popular rebellion onset as a function of income and education Gini, holding other variables at their mean values. The probabilities were estimated using *CLARIFY* software (Tomz, Wittenberg & King, 2003).

Tables

Table I. Summary statistics

Name	Observations	Mean	S.E.	Min	Max
Popular rebellion	N=7471	.010	.101	0	1
Income Gini	N=4130	.381	.106	.154	.713
Education Gini	N=6200	.459	.223	.09	.99
Xpolity scores (14-point scale)	N=6099	7.900	4.834	1	14
Xpolity scores (14-point scale)^2	N=6099	85.777	81.037	1	196
GDP per capita ($ thousands) (ln)	N=6675	1.081	1.098	-1.575	3.759
GDP per capita growth	N=6655	1.831	6.146	-61.473	76.901
Population size (ln)	N=7471	15.781	.1664	11.599	21.025
Peace years (with decay function)	N=7471	.261	.378	0	1

Table II. Logistic regression estimates of popular rebellion onset

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8a)	(1.8b)	(1.9a)	(1.9b)
Income Gini	**3.276*** **(1.482)**		**3.186†** **(1.817)**	**3.403†** **(1.846)**	**3.372†** **(1.859)**	**3.411†** **(1.939)**	**3.685†** **(1.901)**	**3.076†** **(1.781)**	**29.805†** **(17.568)**		
Income Gini^2									-30.679 (20.945)		
Education Gini		**1.833***** **(.494)**	**2.330**** **(.776)**	**2.050*** **(.933)**	**2.089*** **(.914)**	**2.341*** **(1.133)**	**2.224†** **(1.138)**			1.203 (1.022)	**11.683*** **(5.458)**
Education Gini^2											**-9.1873*** **(4.470)**
Xpolity scores				-.006 (.046)	.109 (.245)	.127 (.244)	.113 (.235)	-.106 (.253)	-.167 (.244)	.225 (.212)	.180 (.203)
Xpolity scores^2					-.007 (.014)	-.008 (.014)	-.007 (.014)	.005 (.015)	.009 (.014)	-.014 (.013)	-.011 (.012)
GDP per capita(ln)						.086 (.285)	.053 (.283)	-.253 (.247)	-.215 (.241)	-.054 (.244)	-.004 (.226)
GDP per capita growth							.063 (.044)	.052 (.034)	.050 (.034)	.039 (.037)	.038 (.036)
Population size(ln)	**.216*** **(.094)**	**.265***** **(.060)**	**.265*** **(.106)**	**.270*** **(.110)**	**.271*** **(.111)**	**.266*** **(.117)**	**.259*** **(.108)**	**.204*** **(.104)**	**.202†** **(.104)**	**.214**** **(.079)**	**.193**** **(.075)**
Peace years	**.638†** **(.098)**	.131 (.322)	.449 (.429)	.509 (.480)	.502 (.474)	.516 (.478)	.554 (.489)	.502 (.430)	.433 (.416)	.282 (.389)	.154 (.412)
Constant	**-9.819***** **(1.842)**	**-9.947***** **(1.024)**	**-11.693***** **(2.199)**	**-11.705***** **(2.573)**	**-12.062***** **(2.694)**	**-12.255***** **(3.209)**	**-12.330***** **(3.048)**	**-8.875***** **(2.434)**	**-14.221***** **(4.406)**	**-9.474***** **(1.888)**	**-11.678***** **(2.263)**
Wald χ^2	18.87	38.24	36.86	29.63	28.89	37.17	38.84	50.29	46.59	29.50	30.29
N	4130	6200	3682	3199	3199	3149	3149	3462	3462	5004	5004
N of popular rebellions	36	57	31	28	28	28	28	32	32	46	46

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

Table III. Logistic regression estimates of popular rebellion onset (imputed data)

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)	(2.8a)	(2.8b)	(2.9a)	(2.9b)
Income Gini	**2.590**		**1.922**	**1.995**	**1.900**	**1.773†**	**1.811†**	**1.959**	12.890		
	(.825)		**(.900)**	**(.902)**	**(.905)**	**(.951)**	**(.950)**	**(.951)**	(9.450)		
Income Gini^2									-11.940		
									(11.056)		
Education Gini		**1.813*** **	**1.595*** **	**1.303***	**1.302***	1.107	1.095			**1.192†**	**11.782**
		(.455)	**(.489)**	**(.586)**	**(.579)**	(.692)	(.689)			**(.681)**	**(4.320)**
Education Gini^2											**-9.150***
											(3.756)
Xpolity scores				-.032	.209	.193	.184	.149	.144	.188	.178
				(.0314)	(.183)	(.187)	(.185)	(.181)	(.174)	(.188)	(.183)
Xpolity scores^2					-.015	-.014	-.013	-.012	-.011	-.013	-.012
					(.011)	(.011)	(.011)	(.011)	(.010)	(.011)	(.011)
GDP per capita(ln)						-.094	-.116	-.226	-.212	-.165	-.085
						(.167)	(.174)	(.152)	(.148)	(.169)	(.158)
GDP per capita growth							.028	.028	.028	.027	.026
							(.024)	(.023)	(.023)	(.023)	(.022)
Population size(ln)	**.236*** **	**.232*** **	**.260*** **	**.267*** **	**.271*** **	**.267*** **	**.263*** **	**.251*** **	**.248*** **	**.236*** **	**.227*** **
	(.054)	**(.053)**	**(.056)**	**(.055)**	**(.054)**	**(.055)**	**(.054)**	**(.052)**	**(.053)**	**(.051)**	**(.050)**
Peace years	.240	.079	.061	.090	.051	.020	.040	.091	.047	.030	-.072
	(.259)	(.274)	(.275)	(.276)	(.278)	(.287)	(.290)	(.287)	(.285)	(.292)	(.299)
Constant	**-9.476*** **	**-9.226*** **	**-10.349*** **	**-10.125*** **	**-10.801*** **	**-10.473*** **	**-10.452*** **	**-9.534*** **	**-11.829*** **	**-9.312*** **	**-11.903*** **
	(1.022)	**(.917)**	**(1.082)**	**(1.158)**	**(1.262)**	**(1.446)**	**(1.436)**	**(1.206)**	**(2.392)**	**(1.243)**	**(1.628)**
F	8.99	12.47	10.38	8.73	8.26	8.08	7.10	7.84	5.74	7.63	6.33
Average RVI	.008	.034	.020	.072	.094	.085	.081	.082	.168	.084	.079
Imputed datasets	5	5	5	5	5	5	5	5	5	5	5
N	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471
N of popular rebellions	77	77	77	77	77	77	77	77	77	77	77

Coefficients (*b*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

THE INEQUALITY-CONFLICT NEXUS RE-EXAMINED: INCOME, EDUCATION AND POPULAR REBELLIONS

ONLINE APPENDIX

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This Online Appendix provides:

1. Conceptualization and coding criteria used to code popular rebellions in the paper;
2. A full list of popular rebellions (Table I);
3. Details and diagnostics of the multiple imputation model employed in the paper;
4. Robustness tests of the results reported in the paper's Tables II and III using alternative coding of the dependent variable:
    4.1. Including coups (Tables IIa and IIb);
    4.2. Excluding sectarian conflicts (Tables IIIa and IIIb);
    4.3. Excluding cases with limited popular participation (Tables IVa and IVb).

1. Conceptualization and coding criteria used to code popular rebellions in the paper

As described in the paper, to code popular rebellions I used the Categorically Disaggregated Conflict Dataset (CDC) (Bartusevičius, 2013) as a base. To explain the coding of popular rebellions, I first explain how conflicts are categorized in the CDC.

The CDC Dataset[34]

The CDC categorizes conflicts based on two distinctions:

(i) The aims over which conflicts are fought (governmental or territorial);

(ii) The ethnic composition of conflicting parties.

The two distinctions applied at once result in the following categorization:

		Fought over	
		Government	Territory
Fought between	Groups of different ethnicity	(1) Ethnic governmental	(2) Ethnic territorial
	Groups of the same ethnicity	(3) Non-ethnic governmental	(4) Non-ethnic territorial

The CDC uses UCDP/PRIO dataset as a base; therefore, it employs the UCDP/PRIO's definition of an aggregate conflict:

> 'a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths' (Themnér, 2011: 1).

The CDC also relies on the UCDP/PRIO's coding of incompatibility ('Incomp') to distinguish between governmental conflicts ('incompatibility concerning type of political system, the replacement of the central government, or the change of its composition') and territorial conflicts ('incompatibility concerning status of a territory, [...] e.g., secession or autonomy').

[34] The following description of the CDC dataset is a condensed version of a description of the CDC dataset provided in Bartusevičius (2013). The rationale behind coding decisions (and the need for such a dataset) cannot be explained here in full. Interested readers should consult the original source.

For full definitions see Themnér (2011).

Subsequently, the CDC classifies these conflicts as ethnic or non-ethnic. Following Gurr and Harff – the CDC defines 'ethnic groups' as those

> composed of people who share a distinctive and enduring collective identity based on shared experiences and cultural traits…[who]…may define themselves, and be defined by others, in terms of any or all of the following traits: life ways, religious beliefs, language, physical appearance, region of residence, traditional occupations, and a history of conquest and repression by culturally different peoples' (1994: 190).

Based on this definition, the CDC classifies every conflict between two or more groups whose majorities represent different ethnicities as 'ethnic' and every conflict between groups whose majorities represent the same ethnicity as 'non-ethnic'. Conflicts in which individuals of one ethnicity compose a substantial part of both opposing groups are considered 'non-ethnic'.

As the CDC was primarily established to study the conflict *onset*, conflicts in the CDC are classified based on their characteristics recorded in the initial phase. Thus, conflicts that start between non-ethnic groups but develop into inter-ethnic clashes are considered 'non-ethnic conflicts' and conflicts that start between ethnic groups but develop into clashes between members of the same ethnicity are considered 'ethnic conflicts'.

For the reasons described in Bartusevičius (2013), the CDC disregards the motivation of conflicting groups and focus *solely on their composition.* No matter the reason a conflict is fought, it is considered an 'ethnic conflict' if the conflicting parties are composed of different ethnic groups. The CDC assumes that conflicts fought between ethnic groups are, indeed, fought over ethnic issues. Equally, the CDC assumes that conflicts involving systematic fighting and killing between individuals of the same ethnicity are non-ethnic conflicts.

The following is the exact description of how the coding of 'ethnic' and 'non-ethnic' conflicts was implemented in the CDC:

- First, identification of *the parties to a conflict*. For this purpose, the CDC used the UCDP/PRIO's 'SideA' and 'SideB' variables.
- Second, determination of *the composition of the parties to a conflict*. The coding of the

composition of SideA and SideB was based on author's own reading of primary and secondary sources. SideA is always the government of a state, and to determine its composition the CDC focused on (i) the executive branch (i.e., presidents, prime ministers, members of the cabinet), (ii) military leadership and (iii) foot soldiers taking part in the conflict. In many cases, the CDC coded the composition of SideA based on the composition of its *de facto* leaders, assuming that the formal composition of the government (especially in autocracies) may not represent the actual power distribution within the executive. Similarly, to determine the composition of SideB, the CDC focused on the composition of (i) political and/or military leadership and (ii) foot soldiers.

- Third, determination of the *ethnic differences of the parties to a conflict*. 'Ethnic differences' in the CDC were operationalized by differences in language, religion and 'race'.[35] The CDC coded SideA and SideB as 'ethnically different' if their members were distinct in *at least one* of the three characteristics.[36] It is important to note that the CDC treats language, religion and 'race' merely as *proxies* of the concept of 'ethnicity' – and not as constitutive parts of 'ethnicity'. The CDC concurs with the widely-held view that ethnic affiliations are, to a great extent, socially constructed, and acknowledges that some groups may define their ethnicity on the basis of other attributes. Yet language, religion and 'race' are the qualities that can be more or less unambiguously observed and used as proxies of the directly unobservable 'ethnicity'. These are also the qualities that (taken separately) help, according to the CDC – surprisingly well – to empirically distinguish between groups widely perceived as distinct 'ethnic groups'.[37]
- Fourth, determination of *the pattern of confrontation between parties to a conflict*. In this step, the CDC attempted to ascertain whether a conflict involved systematic fighting between (and killing of) members of the same ethnic group.

[35] Note, therefore, that conflict coding into 'ethnic' and 'non-ethnic' in the CDC did not merely rely on the labels attached to groups (e.g. 'Christian Maronites' or 'Kurds'), but on actual linguistic, religious and 'racial' characteristics.

[36] To distinguish between separate languages and two dialects of the same language the CDC used *Ethnologue* (Lewis, Simons & Fennig, 2013). To determine the religion of particular ethnic groups the CDC used *World Christian Database* (Johnson, 2007). Note that followers of the main branches of Islam (Shia and Sunni) as well as members of the main groupings of Christianity (Catholicism, Protestantism and Orthodoxy) are considered members of different ethnic groups. The CDC provides coding for all three characteristics so that potential users could easily apply other combinations of the three characteristics to match alternative definitions of ethnic conflicts.

[37] Indeed, there are very few groups widely considered to be 'distinct ethnic groups' that the coding criteria introduced in the CDC fail to distinguish – most notably, Tutsis and Hutus in Rwanda and Burundi and, less-well known, the Lulua and Luba in DRC.

To make the coding explicit, the CDC provides coding descriptions (along with references to the primary and secondary literature), documenting coding choices along the four steps for every conflict.

The following are the primary advantages of the CDC as identified in Bartusevičius (2013):

1. The CDC is based on explicit definition and coding criteria, allowing systematic empirical comparison of the conflict categories deemed important in recent conflict research.
2. It provides explicit coding of the three principal marks of ethnicity (language, religion and 'race'), allowing potential users to quickly alter the coding of ethnic/non-ethnic categories to fit alternative definitions.
3. It documents coding decisions, allowing users to track (and, if needed, update) individual coding choices.
4. It categorizes conflicts based on 'who *actually* fought whom' – not just on 'who were the members of conflicting parties' (as is the case previously introduced categorically disaggregated datasets). This allows more precise coding of conflicts where conflicting parties – despite claiming to represent different ethnic groups – engage in systematic intra-ethnic fighting. This, in turn, results in a more 'conservative' list of ethnic conflicts, allowing statistical analysis of the non-ethnic territorial category.

The UCDP/PRIO dataset (v.4-2011) contains 368 separate onsets of aggregate intrastate armed conflicts and internationalized intrastate armed conflicts. In line with previous research, the CDC applied the two-year intermittency rule. Therefore, the final number of onsets in the CDC amounts to 331: 59 ethnic governmental, 128 ethnic territorial, 124 non-ethnic governmental and 20 non-ethnic territorial.

The CDC comes in two formats:

- .xls file (full list of variables together with the codebook);
- .pdf file (a more reader-friendly version of the dataset that contains the codebook (p.1–5), key variables and Coding Descriptions).

Popular rebellions

As indicated in the paper (p. 11), the CDC's third category – 'non-ethnic governmental' – was employed as a base for coding popular rebellions. The CDC contains 124 onsets of non-ethnic governmental conflicts recorded in 1946–2009. As the time span in the paper was restricted to 1961–2009, 24 cases of popular rebellions were dropped. Subsequently, 23 cases of non-ethnic governmental conflicts were dropped as cases of violent coups/coup attempts. Following the conceptual framework introduced in the paper, *popular participation* was used as an operational difference between popular rebellions and violent coups/coup attempts. Thus, conflicts limited to the *elitist struggle within the state apparatus* were treated as coups, and conflicts involving popular participation were coded as popular rebellions.

I have not applied any numeric threshold for popular participation; therefore, popular rebellions include several 'border' cases (e.g., Government of Bolivia vs. National Liberation Army, ID: 1), where popular participation was rather limited (from several dozens to hundreds of individuals). Moreover, the analysis includes several cases of sectarian conflicts (e.g., Government of Nigeria vs. Boko Haram, ID: 100).[38]

These cases could not have been left out without additional ad hoc coding rules. However, as can be seen from the table below, sectarian conflicts (marked with †), as well as rebellions with limited popular participation (marked with *), constitute relatively small fraction of cases in the sample – the vast majority of popular rebellions were political in nature and involved extensive popular participation. As demonstrated in robustness tests below, including coups, removing cases with limited participation or sectarian conflicts does not significantly affect the results reported in the paper.

[38] Potential users are welcome to enquire about individual coding decisions and references used to inform these coding decisions.

2. Full list of popular rebellions (Table 1)

Table 1. Popular Rebellions 1961–2009

ID	Side A	Side B	Onset year
1	Government of Bolivia	National Liberation Army	1967*
10	Government of Philippines	Communist Party of the Philippines	1969
22	Government of Paraguay	Military faction (forces of Andres Rodriguez)	1989
24	Government of Myanmar	All-Burma Students Democratic Front	1990
29	Government of India	Communist Party of India – Marxist-Leninist	1969
29	Government of India	People's War Group	1990
33	Government of North Yemen	Royalists	1962
33	Government of North Yemen	National Democratic Front	1979
33	Government of Yemen	al-Qaida in the Arabia Peninsula	2009†
36	Government of Guatemala	Rebel Armed Forces	1963
43	Government of Thailand	Communist Party of Thailand	1974
45	Government of Cuba	Cuban Revolutionary Council	1961
50	Government of Argentina	Military faction (colorados)	1963
50	Government of Argentina	People's Revolutionary Army	1974
62	Government of Iraq	Military faction (forces of Abd as-Salam Arif); National Council of the Revolutionary Command	1963
62	Government of Iraq	Al-Mahdi Army; Supporters of Muslims; The Monotheism and Jihad Group	2004
63	Government of Lebanon	Lebanese National Movement	1975
63	Government of Lebanon	Lebanese National Movement	1982
64	Government of Malaysia	Communist Party of Malaya	1974
64	Government of Malaysia	Communist Party of Malaya	1981
70	Government of Ethiopia	Ethiopian People's Revolutionary Party; Tigrean People's Liberation Front	1976
72	Government of Nepal	Communist Party of Nepal–Maoist	1996
73	Government of France	Secret Army Organization	1961*
80	Government of Venezuela	Military faction (navy)	1962
80	Government of Venezuela	Bandera Roja (Red Flag)	1982*
80	Government of Venezuela	Military faction (forces of Hugo Chávez)	1992
87	Government of Gabon	Military faction (forces loyal to Léon M'Ba)	1964
90	Government of Burundi	Military faction (forces loyal to Gervais Nyangoma)	1965
90	Government of Burundi	Party for the Liberation of the Hutu People	1991
90	Government of Burundi	National Council for the Defense of Democracy	1994
90	Government of Burundi	Party for the Liberation of the Hutu People – Forces for National Liberation	2008
92	Government of Colombia	Revolutionary Armed Forces of Colombia	1964
93	Government of Dominican Republic	Military faction (constitutionalists)	1965
95	Government of Peru	National Liberation Army; Movement of the Revolutionary Left	1965
95	Government of Peru	Shining Path	1982
95	Government of Peru	Shining Path	2007*
98	Government of Ghana	National Liberation Council	1966
98	Government of Ghana	Military faction (forces of Jerry John Rawlings)	1981
98	Government of Ghana	Military faction (forces of Ekow Dennis and Edward Adjei-Ampofo)	1983
100	Government of Nigeria	Boko Haram	2009†
103	Government of Cambodia	Red Khmers	1967
103	Government of Cambodia	Kampuchean National United Front for National Salvation	1978
111	Government of Guinea	Rally of Democratic Forces of Guinea	2000*
113	Government of Sudan	Sudanese Communist Party	1971
113	Government of Sudan	Islamic Charter Front	1976
114	Government of	National Movement for the Independence of Madagascar	1971

	Madagascar		
115	Government of Morocco	Military faction (forces of Mohamed Madbouh)	1971
117	Government of Sri Lanka	People's Liberation Front	1971
117	Government of Sri Lanka	People's Liberation Front	1989
118	Government of Uganda	Military faction (forces of Charles Arube)	1974
120	Government of El Salvador	Military faction (forces of Benjamin Mejia)	1972
120	Government of El Salvador	People's Revolutionary Army; Farabundo Marti Popular Liberation Forces	1979
123	Government of Uruguay	Movement of National Liberation/Tupamaros	1972
125	Government of Chile	Forces of Augusto Pinochet, Toribio Merino and Leigh Guzman	1973
130	Government of Eritrea	Eritrean Muslimsic Jihad Movement – Abu Suhail faction	1997†
130	Government of Eritrea	Eritrean Muslimsic Jihad Movement – Abu Suhail faction	2003†
137	Government of Afghanistan	People's Democratic Republic of Afghanistan	1978
137	Government of Afghanistan	Taleban	2003
140	Government of Nicaragua	Sandinista National Liberation Front	1977
140	Government of Nicaragua	Contras/Nicaraguan Democratic Forces	1982
141	Government of Somalia	Somali Salvation Democratic Front	1982
141	Government of Somalia	Somali National Movement	1986
141	Government of Somalia	Somali Reconciliation and Restoration Council	2001
141	Government of Somalia	Supreme Islamic Council of Somalia	2006
143	Government of Iran	People's Mujahideen	1979
143	Government of Iran	People's Mujahideen	1986
143	Government of Iran	People's Mujahideen	1991
143	Government of Iran	People's Mujahideen	1997
145	Government of Saudi Arabia	The Salafi groups which practice hisba	1979†
148	Government of Tunisia	Tunisian Armed Resistance	1980*
149	Government of Gambia	National Revolutionary Council	1981*
158	Government of Cameroon	Military faction (forces of Ibrahim Saleh)	1984
163	Government of Togo	Togolese Movement for Democracy	1986
164	Government of South Yemen	Yemenite Socialist Party - Abdul Fattah Ismail faction	1986
165	Government of Burkina Faso	Popular front	1987
167	Government of Comoros	Presidential guard	1989
172	Government of Panama	Military faction (forces of Moises Giroldi)	1989
175	Government of Romania	National Salvation Front	1989
179	Government of Rwanda	Rwandan Patriotic Front	1990
179	Government of Rwanda	Armed People for the Liberation of Rwanda	1996
179	Government of Rwanda	Armed People for the Liberation of Rwanda	2009
185	Government of Georgia	National Guard and Mkhedrioni	1991
186	Government of Haiti	Military faction (forces of Himmler Rebu and Guy Francois)	1989
186	Government of Haiti	Military faction (forces of Raol Cédras)	1991
186	Government of Haiti	National Front for the Liberation of Haiti, OP Lavalas (Chimères)	2004
187	Government of Sierra Leone	Revolutionary United Front	1991
188	Government of Turkey	Revolutionary Left	1991*
188	Government of Turkey	Maoist Communist Party	2005
191	Government of Algeria	Exile and Redemption	1991†
196	Government of Egypt	Islamic Group	1993†
200	Government of Tajikistan	United Tajik Opposition	1992
201	Government of Azerbaijan	Military faction (forces of Suret Husseinov)	1993
201	Government of Azerbaijan	Special Police Brigade	1995
204	Government of Russia (Soviet Union)	Parliamentary Forces	1993
205	Government of Mexico	Popular Revolutionary Army	1996
209	Government of Pakistan	Movement for the Enforcement of Islamic Laws	2007†
216	Government of Guinea-Bissau	Military Junta for the Consolidation of Democracy, Peace and Justice	1998
217	Government of Lesotho	Military faction	1998
221	Government of Uzbekistan	Islamic Movement of Uzbekistan	1999†

221	Government of Uzbekistan	Jihad Islamic Group	2004†

Grey colour indicates cases excluded from the main analysis in the paper (i.e., coups/coup attempts). *Cases with limited popular participation; † Sectarian conflicts.

3. Details and diagnostics of the multiple imputation model employed in the paper

Multiple imputation was implemented using *Amelia II* (Honaker, King & Blackwell, 2011). The imputation model was set up largely using default options recommended in the *Amelia II* manual. More specifically:

- The imputation model contained all the predictor variables reported in Model 1.7;
- *location* was set as the cross-sectional variable;
- *year* was set as the time-series variable (one knot);
- Cross-section was interacted with time-series;
- The model included lag and lead versions of income Gini and education Gini;
- The imputation model was set to generate five imputed datasets;
- The imputations were exported in 'stacked' Stata file.[39]

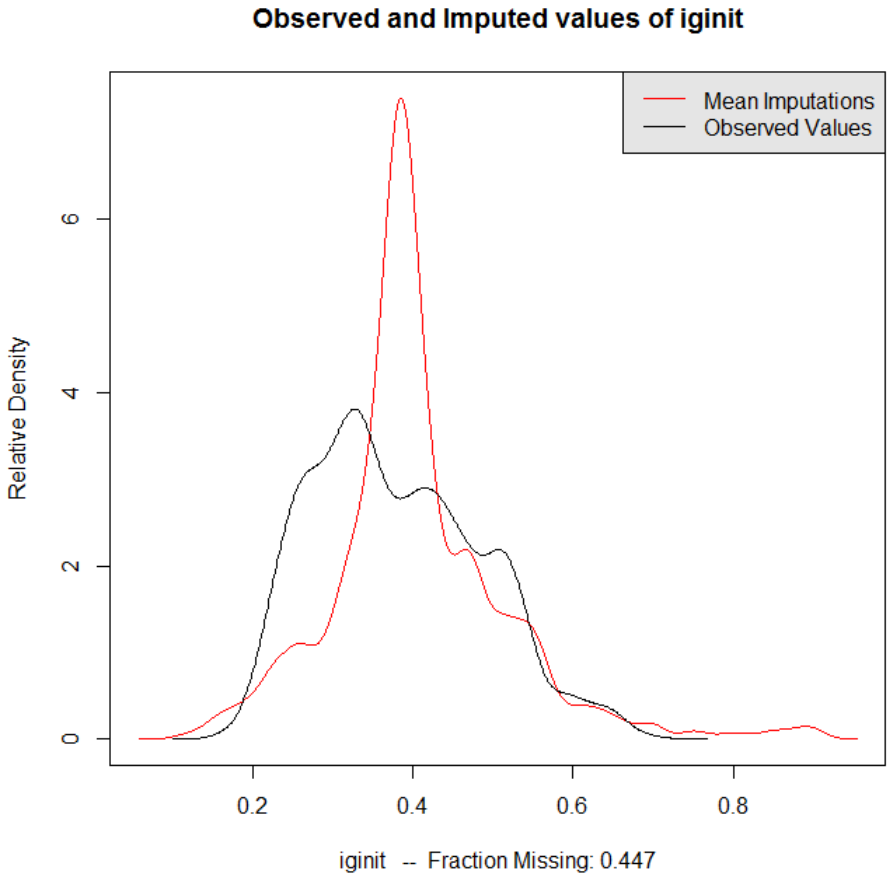
The imputed data was declared as imputed in Stata using:

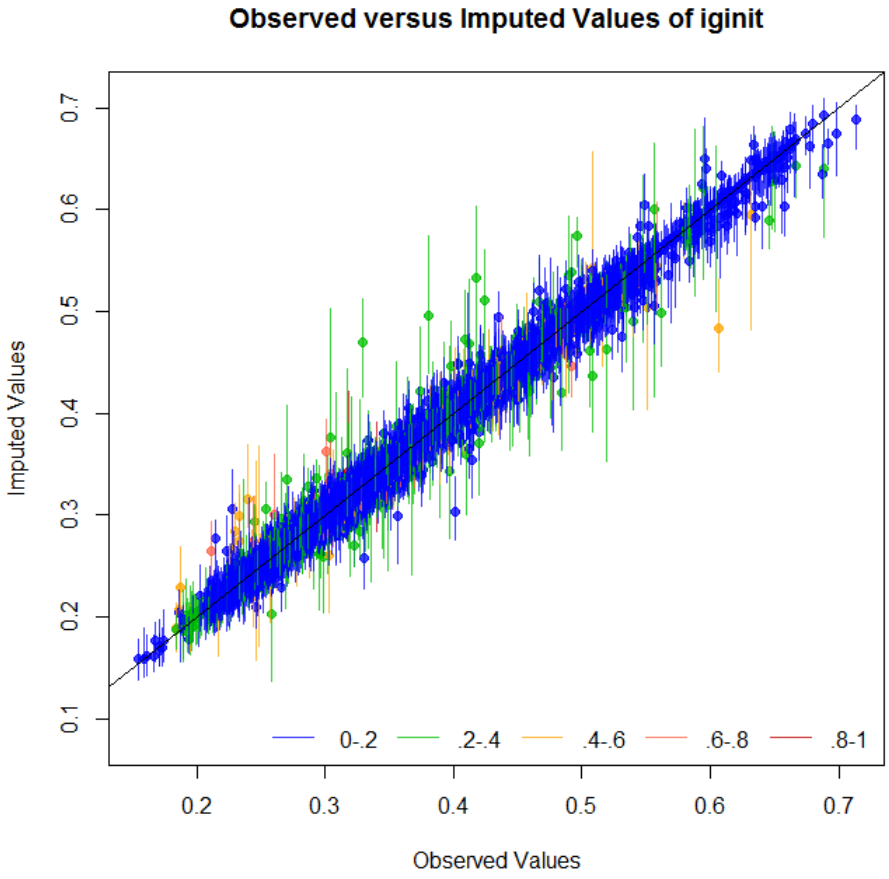
```
mi import flong, m(imp) id(location year) imputed(iginit
eginit xpolt14 xpolt142 gdp_pcgt lngdp_pct iginit2
eginit2) passive(epyears lnpops)
```

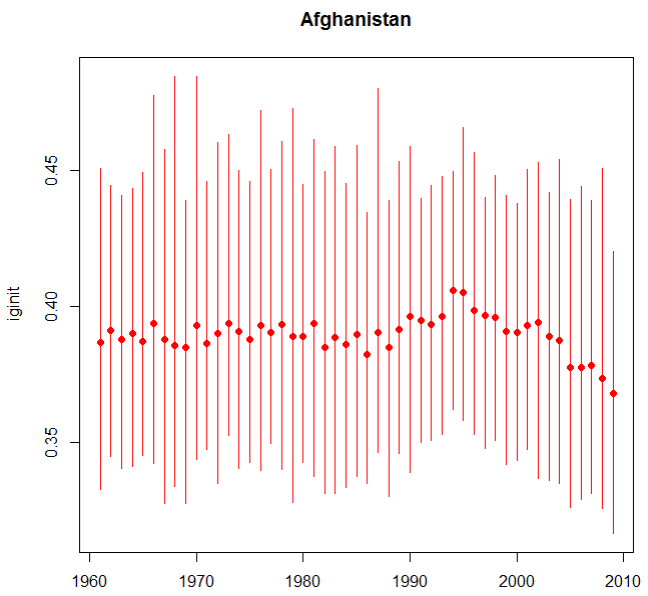
The analysis was implemented using `mi estimate` (see the do-replication file for further details).

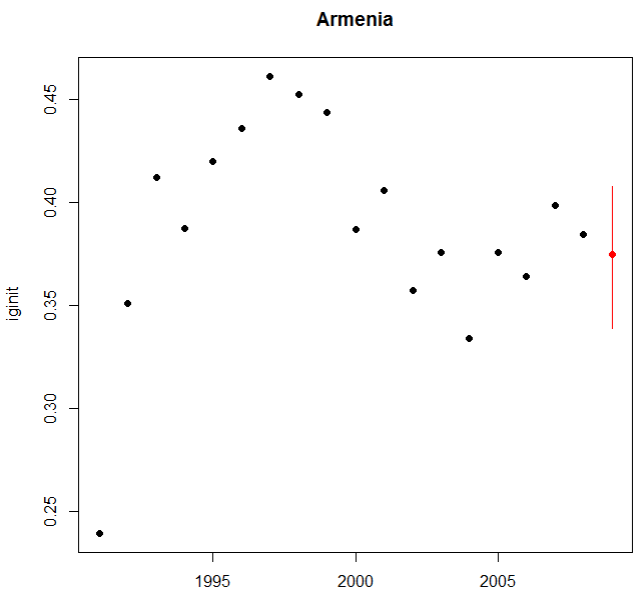
Below I provide some basic imputation diagnostics graphs together with a number of examples of imputed income Gini values for particular countries.

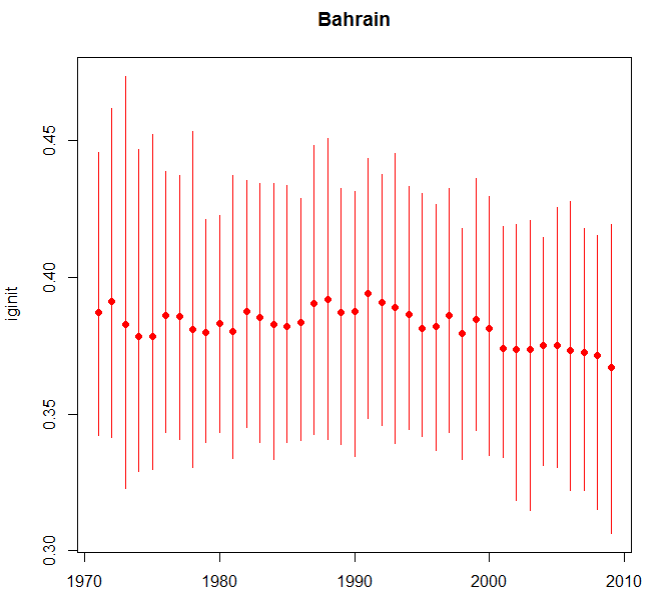
[39] The following is an excerpt from the output log reporting the settings of the imputation model in R:
amelia(x = getAmelia("amelia.data"), m = 5, idvars = NULL, ts = "year",
cs = "location", priors = NULL, lags = c("iginit", "eginit"
), empri = 0, intercs = TRUE, leads = c("iginit", "eginit"
), splinetime = 1, logs = NULL, sqrts = NULL, lgstc = NULL,
ords = "xpolt14", noms = NULL, bounds = c(3, 4, 5, 0, 0,
0, 1, 1, 14), max.resample = 1000, tolerance = 1e-04)

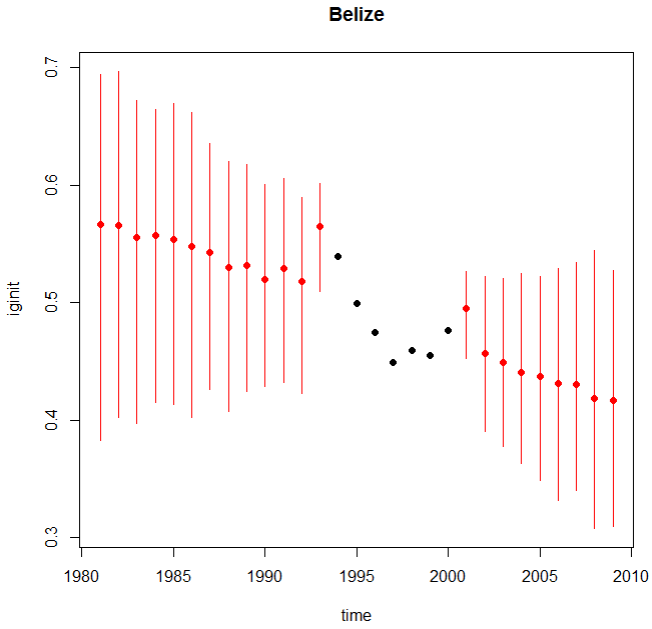

Observed and Imputed values of iginit
Mean Imputations
Observed Values
Relative Density
0
2
4
6
0.2
0.4
0.6
0.8
iginit -- Fraction Missing: 0.447

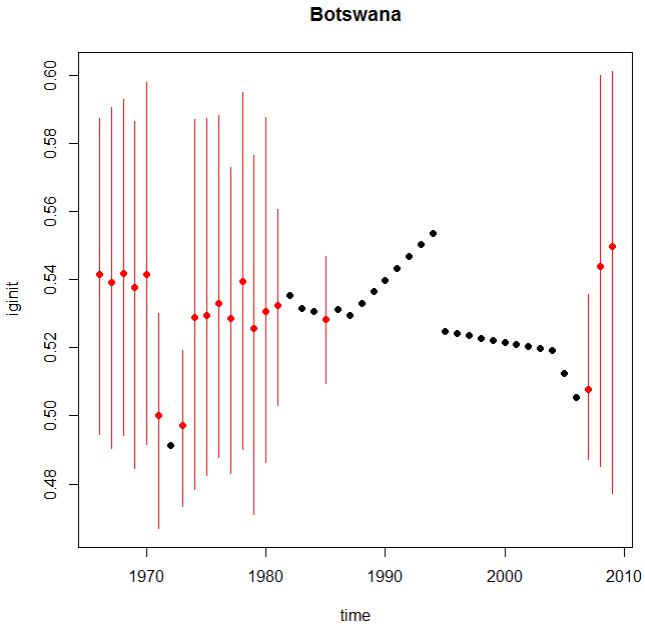

Observed versus Imputed Values of iginit
Imputed Values
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0-.2
.2-.4
.4-.6
.6-.8
.8-1
0.2
0.3
0.4
0.5
0.6
0.7
Observed Values

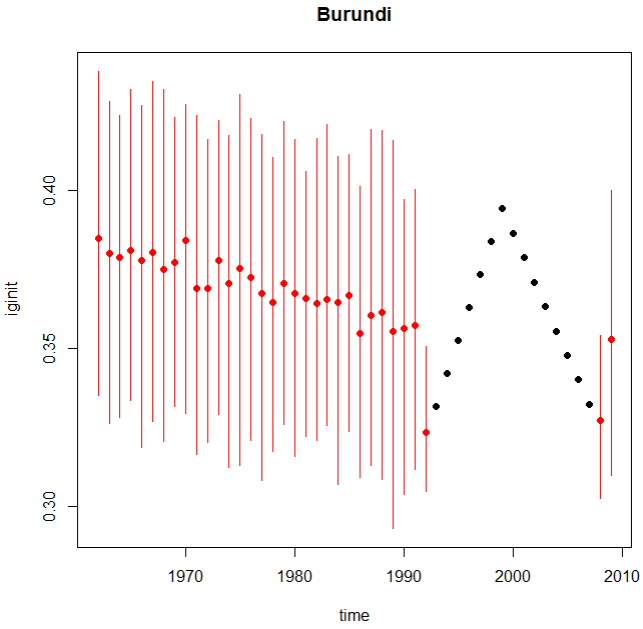

Afghanistan
iginit
0.35
0.40
0.45
1960
1970
1980
1990
2000
2010

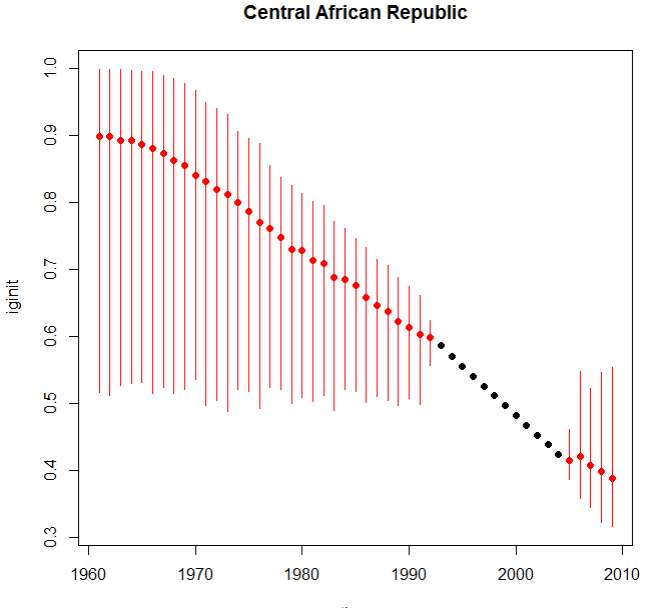

Armenia
iginit
0.25
0.30
0.35
0.40
0.45
1995
2000
2005

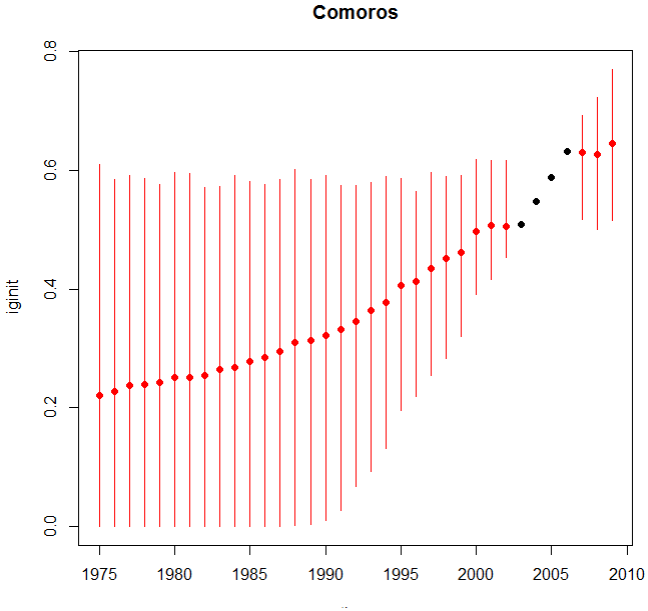

Bahrain
iginit
0.30
0.35
0.40
0.45
1970
1980
1990
2000
2010

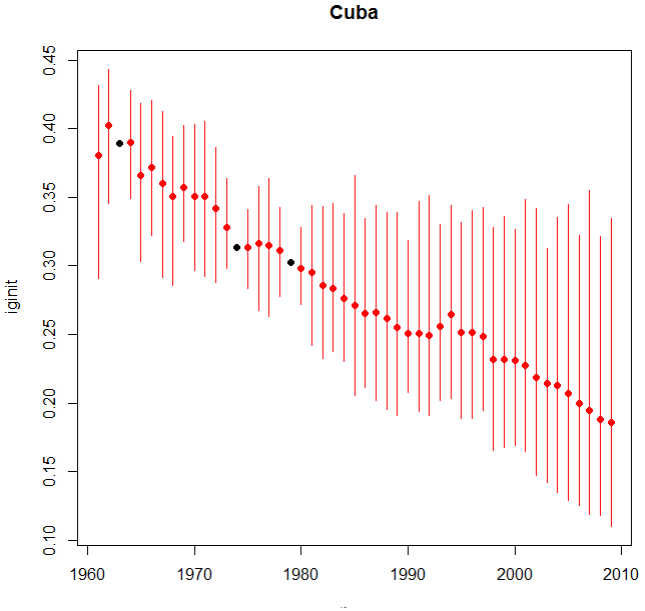

Belize
iginit
0.3
0.4
0.5
0.6
0.7
1980
1985
1990
1995
2000
2005
2010
time

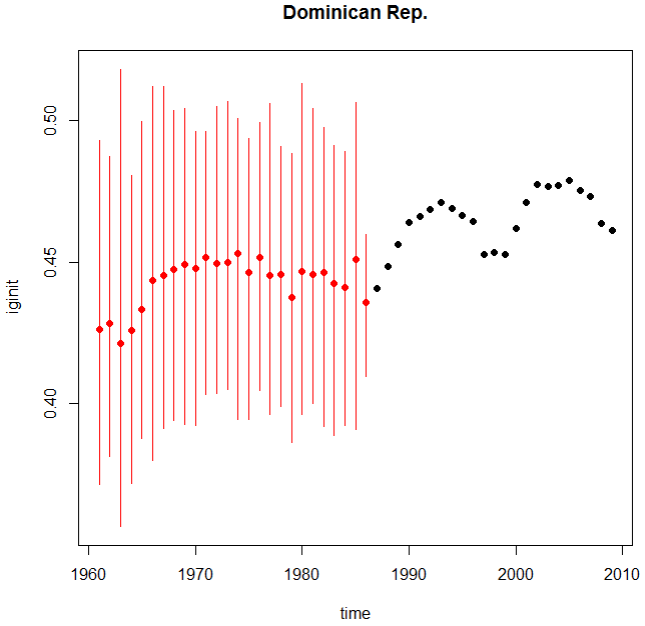

Botswana
iginit
0.48
0.50
0.52
0.54
0.56
0.58
0.60
1970
1980
1990
2000
2010
time

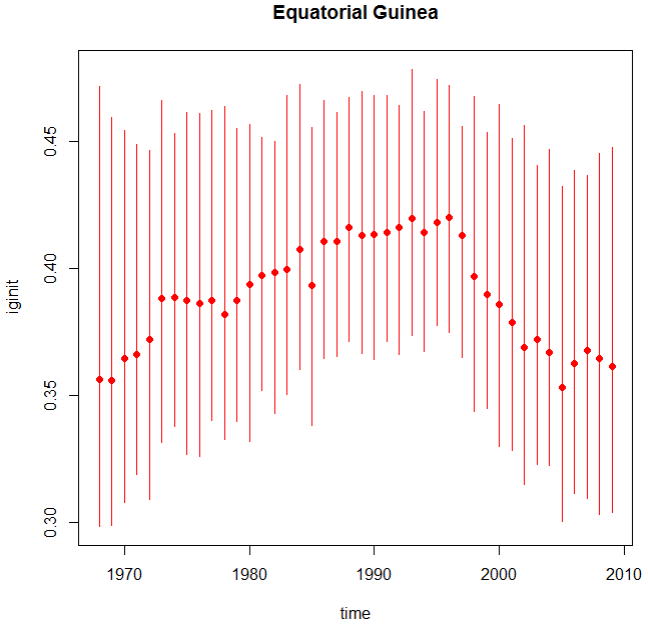

Burundi
iginit
0.30
0.35
0.40
1970
1980
1990
2000
2010
time


Central African Republic
iginit
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
1960
1970
1980
1990
2000
2010


Comoros
iginit
0.8
0.6
0.4
0.2
0.0
1975
1980
1985
1990
1995
2000
2005
2010


Cuba
iginit
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
1960
1970
1980
1990
2000
2010


Dominican Rep.
iginit
0.50
0.45
0.40
1960
1970
1980
1990
2000
2010
time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iginit
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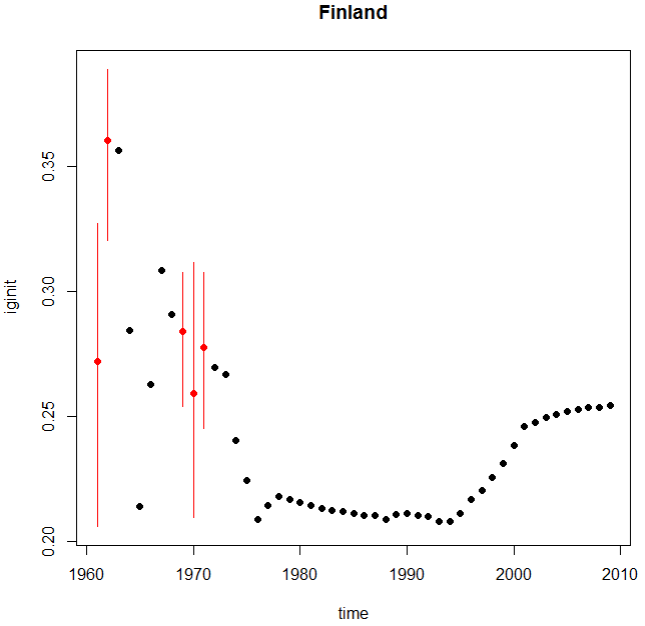
0.40
0.35
0.30
1970
1980
1990
2000
2010
time


Finland
iginit
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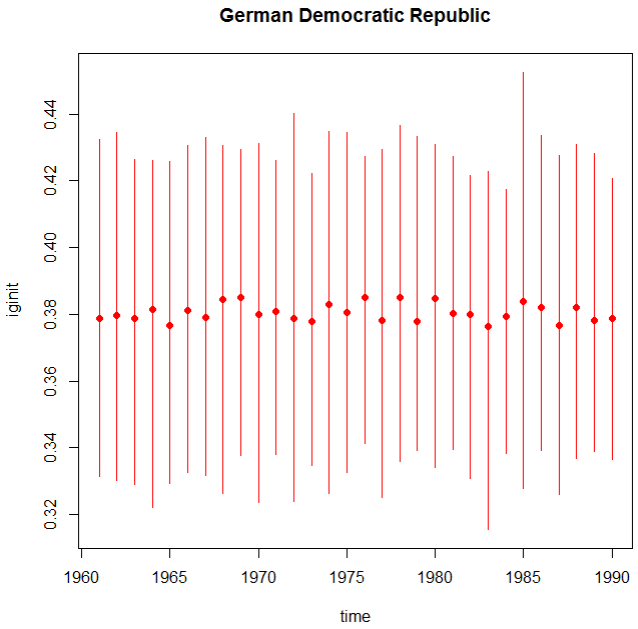
0.30
0.25
0.20
1960
1970
1980
1990
2000
2010
time


German Democratic Republic
iginit
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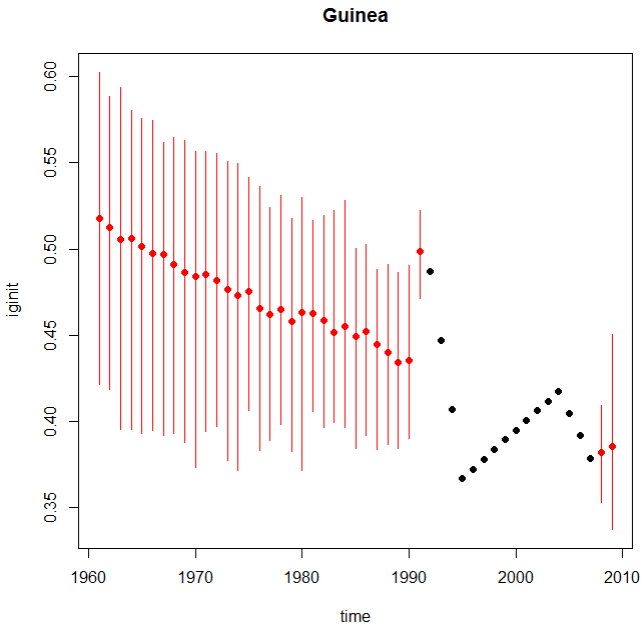
0.34
0.36
0.38
0.40
0.42
0.44
1960
1965
1970
1975
1980
1985
1990
time


Guinea
iginit
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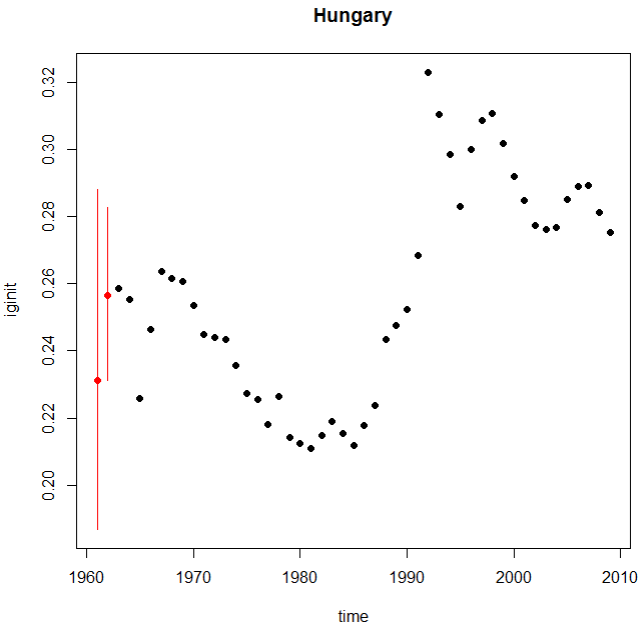
0.40
0.45
0.50
0.55
0.60
1960
1970
1980
1990
2000
2010
time


Hungary
iginit
0.20
0.22
0.24
0.26
0.28
0.30
0.32
1960
1970
1980
1990
2000
2010
time

4. Robustness tests of the results reported in the paper's Tables II and III using alternative coding of the dependent variable

Table IIa. Logistic regression estimates of popular rebellion onset (including coups)

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8a)	(1.8b)	(1.9a)	(1.9b)
Income Gini	**4.107*** (1.235)**		**3.950** (1.509)**	**4.076** (1.519)**	**4.066** (1.531)**	**4.141* (1.622)**	**4.259** (1.573)**	**3.588* (1.479)**	**34.034* (14.156)**		
Income Gini^2									**-34.532* (16.595)**		
Education Gini		**2.167*** (.428)**	**2.842*** (.679)**	**2.477** (.816)**	**2.497** (.797)**	**2.772** (.916)**	**2.688** (.942)**			**1.598† (.829)**	**11.569** (4.464)**
Education Gini^2											**-8.603* (3.659)**
Xpolity scores				-.018 (.040)	.057 (.208)	.078 (.210)	.074 (.206)	-.065 (.232)	-.133 (.221)	.308 (.189)	.261 (.180)
Xpolity scores^2					-.005 (.012)	-.006 (.013)	-.005 (.013)	.001 (.014)	.005 (.013)	**-.019† (.011)**	-.015 (.011)
GDP per capita (ln)						.104 (.233)	.076 (.249)	-.178 (.223)	-.134 (.217)	-.016 (.191)	.019 (.173)
GDP per capita growth							.033 (.062)	-.005 (.057)	-.006 (.055)	-.004 (.035)	-.004 (.035)
Population size (ln)	**.138† (.083)**	**.206*** (.052)**	**.202* (.095)**	**.197* (.101)**	**.197† (.101)**	**.190† (.105)**	**.184† (.104)**	.111 (.107)	.111 (.105)	**.154* (.073)**	**.139 *(.069)**
Peace years	.562 (.357)	.015 (.281)	.131 (.394)	.194 (.425)	.190 (.421)	.205 (.421)	.226 (.433)	.458 (.385)	.382 (.376)	.020 (.340)	-.098 (.354)
Constant	**-8.594*** (1.560)**	**-8.812*** (.883)**	**-10.874*** (1.927)**	**-10.515*** (2.275)**	**-10.729*** (2.258)**	**-10.942*** (2.608)**	**-10.889*** (2.564)**	**-7.135*** (2.132)**	**-13.355*** (3.722)**	**-8.464*** (1.611)**	**-10.657*** (1.920)**
Wald χ^2	28.57	46.19	46.12	38.46	40.57	43.81	43.73	55.65	52.02	35.69	35.29
N	4130	6200	3682	3199	3199	3149	3149	3462	3462	5004	5004
N of popular rebellions	46	77	39	36	36	36	36	42	42	64	64

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

Table IIb. Logistic regression estimates of popular rebellion onset (including coups) (imputed data)

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)	(2.8a)	(2.8b)	(2.9a)	(2.9b)
Income Gini	**2.674**** **(.827)**		**1.900*** **(.865)**	**1.973*** **(.856)**	**1.879*** **(.856)**	**1.817*** **(.894)**	**1.808*** **(.895)**	**2.026*** **(.892)**	14.666 (9.495)		
Income Gini^2									-13.766 (10.668)		
Education Gini		**2.045***** **(.403)**	**1.828***** **(.432)**	**1.561**** **(.509)**	**1.547**** **(.502)**	**1.454*** **(.590)**	**1.458*** **(.592)**			**1.560**** **(.586)**	**11.111***** **(3.493)**
Education Gini^2											**-8.159**** **(3.003)**
Xpolity scores				-.030 (.027)	.256 (.158)	.248 (.162)	.252 (.163)	.206 (.159)	.200 (.152)	.256 (.165)	.245 (.161)
Xpolity scores^2					**-.018†** **(.009)**	**-.017†** **(.010)**	**-.017†** **(.010)**	-.016 (.009)	-.015 (.009)	**-.017†** **(.010)**	-.016 (.010)
GDP per capita (ln)						-.046 (.141)	-.039 (.144)	-.183 (.129)	-.168 (.127)	-.090 (.139)	-.026 (.129)
GDP per capita growth							-.011 (.025)	-.010 (.025)	-.010 (.025)	-.011 (.024)	-.010 (.023)
Population size (ln)	**.180***** **(.047)**	**.180***** **(.050)**	**.207***** **(.053)**	**.213***** **(.052)**	**.220***** **(.050)**	**.218***** **(.051)**	**.221***** **(.052)**	**.204***** **(.047)**	**.200***** **(.048)**	**.195***** **(.048)**	**.186***** **(.047)**
Peace years	.254 (.234)	.068 (.246)	.052 (.248)	.077 (.249)	.028 (.249)	.013 (.255)	-.002 (.258)	.066 (.254)	.019 (.252)	-.015 (.259)	-.103 (.264)
Constant	**-8.339***** **(-8.339)**	**-8.237***** **(.844)**	**-9.333***** **(1.051)**	**-9.124***** **(1.117)**	**-9.953***** **(1.197)**	**-9.792***** **(1.349)**	**-9.837***** **(1.361)**	**-8.610***** **(1.076)**	**-11.264***** **(2.424)**	**-8.717***** **(1.152)**	**-11.084***** **(1.436)**
F	8.82	14.26	11.45	9.88	9.90	9.33	8.42	9.19	6.91	9.08	7.51
Average RVI	.115	.063	.088	.101	.118	.105	.096	.100	.155	.081	.070
Imputed datasets	5	5	5	5	5	5	5	5	5	5	5
N	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471
N of popular rebellions	77	77	77	77	77	77	77	77	77	77	77

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

Table IIIa. Logistic regression estimates of popular rebellion onset (excluding sectarian conflicts)

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8a)	(1.8b)	(1.9a)	(1.9b)
Income Gini	**3.744*** **(1.629)**		**3.679†** **(1.882)**	**3.956*** **(1.899)**	**3.938*** **(1.909)**	**3.938*** **(2.005)**	**4.312*** **(1.958)**	**3.731†** **(1.933)**	27.248 (18.397)		
Income Gini^2									-26.565 (21.239)		
Education Gini		**1.642**** **(.531)**	**2.126*** **(.832)**	**2.002*** **(1.021)**	**2.033*** **(1.003)**	**2.187†** **(1.246)**	**2.050†** **(1.246)**			.915 (1.060)	**9.269†** **(5.239)**
Education Gini^2											**-7.337†** **(4.310)**
Xpolity scores				.011 (.048)	.105 (.272)	.113 (.271)	.096 (.260)	.064 (.296)	-.011 (.289)	.286 (.226)	.247 (.218)
Xpolity scores^2					-.006 (.015)	-.006 (.016)	-.005 (.015)	-.002 (.017)	.002 (.017)	-.017 (.013)	-.014 (.013)
GDP per capita (ln)						.050 (.307)	.018 (.300)	-.322 (.266)	-.287 (.264)	-.166 (.248)	-.117 (.234)
GDP per capita growth							**.074*** **(.037)**	**.059†** **(.031)**	**.058†** **(.031)**	.048 (.033)	.047 (.033)
Population size (ln)	**.188†** **(.107)**	**.227***** **(.063)**	**.250*** **(.115)**	**.250*** **(.120)**	**.251*** **(.121)**	**.244†** **(.126)**	**.242*** **(.114)**	.183 (.118)	.184 (.118)	**.180*** **(.079)**	**.161*** **(.076)**
Peace years	**.809*** **(.408)**	.269 (.325)	.622 (.432)	.678 (.494)	.672 (.488)	.680 (.491)	.722 (.504)	.633 (.461)	.583 (.446)	.415 (.392)	.313 (.411)
Constant	**-9.747***** **(2.113)**	**-9.351***** **(1.060)**	**-11.686***** **(2.380)**	**-11.875***** **(2.791)**	**-12.186***** **(2.955)**	**-12.213***** **(3.495)**	**-12.450***** **(3.323)**	**-9.737***** **(2.877)**	**-14.493**** **(4.963)**	**-9.093***** **(1.959)**	**-10.786***** **(2.238)**
Wald χ^2	23.48	28.98	36.40	32.21	30.92	38.06	40.78	45.44	43.22	31.06	32.71
N	4130	6200	3682	3199	3199	3149	3149	3462	3462	5004	5004
N of popular rebellions	32	52	30	26	26	26	26	28	28	43	43

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

Table IIIb. Logistic regression estimates of popular rebellion onset (excluding sectarian conflicts) (imputed data)

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)	(2.8a)	(2.8b)	(2.9a)	(2.9b)
Income Gini	**2.911*** (.906)**		**2.287* (.974)**	**2.314* (.964)**	**2.209* (.966)**	**1.937† (1.01933)**	**1.992† (1.025)**	**2.120* (1.029)**	11.370 (8.914)		
Income Gini^2									-9.842 (9.925)		
Education Gini		**1.778*** (.506)**	**1.509** (.549)**	**1.420* (.636)**	**1.416* (.627)**	.980 (.753)	.964 (.749)			1.074 (.743)	**8.976* (4.387)**
Education Gini^2											**-6.803† (3.835)**
Xpolity scores				-.010 (.031)	.264 (.187)	.228 (.194)	.216 (.192)	.186 (.188)	.180 (.181)	.222 (.194)	.214 (.190)
Xpolity scores^2					-.017 (.011)	-.014 (.011)	-.013 (.011)	-.012 (.011)	-.011 (.011)	-.013 (.011)	-.012 (.011)
GDP per capita (ln)						-.212 (.182)	-.242 (.189)	**-.341* (.161)**	**-.327* (.159)**	-.297 (.182)	-.225 (.173)
GDP per capita growth							.036 (.023)	.036 (.023)	.035 (.023)	.035 (.023)	.034 (.022)
Population size (ln)	**.204*** (.057)**	**.193*** (.056)**	**.227*** (.059)**	**.229*** (.058)**	**.236*** (.057)**	**.229*** (.058)**	**.227*** (.057)**	**.217*** (.054)**	**.214*** (.055)**	**.196*** (.052)**	**.186*** (.051)**
Peace years	.304 (.282)	.160 (.295)	.139 (.296)	.148 (.300)	.101 (.302)	.034 (.313)	.056 (.316)	.098 (.314)	.066 (.311)	.042 (.320)	-.035 (.326)
Constant	**-9.257*** (1.095)**	**-8.751*** (.955)**	**-10.087*** (1.167)**	**-10.021*** (1.245)**	**-10.841*** (1.345)**	**-10.141*** (1.564)**	**-10.157*** (1.553)**	**-9.381*** (1.325)**	**-11.356*** (2.449)**	**-8.884*** (1.282)**	**-10.773*** (1.651)**
F	7.57	9.27	8.32	6.96	6.96	7.56	6.52	7.22	5.34	7.03	5.72
Average RVI	.023	.032	.019	.040	.053	.044	.046	.049	.098	.049	.059
Imputed datasets	5	5	5	5	5	5	5	5	5	5	5
N	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471
N of popular rebellions	77	77	77	77	77	77	77	77	77	77	77

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

Table IVa. Logistic regression estimates of popular rebellion onset (excluding cases with limited popular participation)

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(1.8a)	(1.8b)	(1.9a)	(1.9b)
Income Gini	**2.924†**		2.793	**3.512†**	**3.448†**	3.376	**3.696†**	3.178	19.528		
	(1.715)		(2.065)	**(2.053)**	**(2.099)**	(2.173)	**(2.140)**	(1.987)	(15.354)		
Income Gini^2									-18.688		
									(18.148)		
Education Gini		**1.842*** **	**2.502** **	**1.913†**	**2.005***	1.834	1.733			.603	**10.889†**
		(.524)	**(.828)**	**(1.041)**	**(1.012)**	(1.207)	(1.210)			(1.087)	**(5.938)**
Education Gini^2											**-9.060†**
											(4.852)
Xpolity scores				-.014	.240	.224	.202	-.060	-.103	.151	.115
				(.048)	(.261)	(.264)	(.253)	(.270)	(.265)	(.217)	(.207)
Xpolity scores^2					-.015	-.014	-.012	.002	.005	-.011	-.008
					(.015)	(.016)	(.015)	(.016)	(.015)	(.013)	(.013)
GDP per capita (ln)						-.060	-.090	-.265	-.241	-.177	-.121
						(.298)	(.294)	(.263)	(.260)	(.274)	(.255)
GDP per capita growth							.064	.054	.053	.047	.047
							(.043)	(.035)	(.035)	(.035)	(.034)
Population size (ln)	**.215***	**.276*** **	**.260***	**.288***	**.291***	**.282***	**.275***	**.226***	**.225†**	**.231** **	**.209** **
	(.107)	**(.064)**	**(.119)**	**(.122)**	**(.124)**	**(.129)**	**(.118)**	**(.115)**	**(.115)**	**(.080)**	**(.076)**
Peace years	.788†	.252	.538	.563	.548	.541	.583	.577	.531	.423	.303
	(.413)	(.335)	(.460)	(.507)	(.495)	(.501)	(.5121)	(.454)	(.439)	(.406)	(.434)
Constant	**-9.883*** **	**-10.299*** **	**-11.708*** **	**-12.054*** **	**-12.873*** **	**-12.509*** **	**-12.583*** **	**-9.589*** **	**-12.837*** **	**-9.263*** **	**-11.417*** **
	(2.084)	**(1.126)**	**(2.495)**	**(2.835)**	**(2.993)**	**(3.507)**	**(3.336)**	**(2.685)**	**(4.250)**	**(1.994)**	**(2.428)**
Wald χ^2	18.07	6200	3682	3199	3199	3149	3149	3462	3462	5004	5004
N	4130	33.49	33.32	25.64	24.45	51.33	54.18	58.80	53.82	33.36	36.80
N of popular rebellions	31	50	27	25	25	25	25	28	28	40	40

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

Table IVb. Logistic regression estimates of popular rebellion onset (excluding cases with limited popular participation) (imputed data)

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)	(2.8a)	(2.8b)	(2.9a)	(2.9b)
Income Gini	**2.143***		1.454	1.553	1.473	1.272	1.312	1.434	13.921		
	(.9112)		(.993)	(1.000)	(1.000)	(1.031)	(1.035)	(1.026)	(9.346)		
Income Gini^2									-13.935		
									(10.894)		
Education Gini		**1.812*** **	**1.657*** **	**1.238***	**1.236***	.927	.913			.979	**11.937***
		(.480)	**(.518)**	**(.622)**	**(.617)**	(.730)	(.726)			(.716)	**(4.827)**
Education Gini^2											**-9.449***
											(4.171)
Xpolity scores				-.047	.170	.144	.134	.106	.103	.136	.129
				(.034)	(.187)	(.193)	(.190)	(.185)	(.179)	(.192)	(.187)
Xpolity scores^2					-.014	-.012	-.011	-.010	-.009	-.011	-.009
					(.011)	(.011)	(.011)	(.011)	(.011)	(.011)	(.011)
GDP per capita (ln)						-.153	-.178	**-.270†**	-.255	-.212	-.128
						(.178)	(.185)	**(.162)**	(.157)	(.182)	(.170)
GDP per capita growth							.031	.031	.030	.030	.029
							(.024)	(.024)	(.023)	(.024)	(.023)
Population size (ln)	**.231*** **	**.234*** **	**.255*** **	**.267*** **	**.269*** **	**.263*** **	**.259*** **	**.249*** **	**.245*** **	**.240*** **	**.230*** **
	(.057)	**(.057)**	**(.060)**	**(.060)**	**(.059)**	**(.059)**	**(.058)**	**(.056)**	**(.057)**	**(.054)**	**(.053)**
Peace years	.370	.198	.183	.223	.187	.135	.158	.198	.146	.151	.048
	(.266)	(.282)	(.283)	(.283)	(.283)	(.295)	(.298)	(.296)	(.293)	(.300)	(.310)
Constant	**-9.367*** **	**-9.422*** **	**-10.259*** **	**-9.949*** **	**-10.547*** **	**-10.022*** **	**-10.001*** **	**-9.249*** **	**-11.805*** **	**-9.184*** **	**-11.883*** **
	(1.106)	**(.996)**	**(1.198)**	**(1.282)**	**(1.366)**	**(1.533)**	**(1.521)**	**(1.274)**	**(2.418)**	**(1.306)**	**(1.781)**
F	7.40	11.09	8.96	7.48	6.91	7.28	6.39	7.23	5.81	7.07	5.98
Average RVI	.021	.031	.026	.080	.103	.090	.085	.088	.120	.091	.086
Imputed datasets	5	5	5	5	5	5	5	5	5	5	5
N	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471	7471
N of popular rebellions	77	77	77	77	77	77	77	77	77	77	77

Coefficients (*β*) with robust standard errors in parentheses. †p<.10; *p<.05; **p<.01; ***p<.001.

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