Ethnic Inequality and Coups in Sub-Saharan Africa

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Abstract

Does ethnic inequality breed coups? The recent literature on civil war shows both that inequality between ethnic groups induces war and, importantly, that civil wars and coups, although fundamentally different, are related. The literature on coup d'état, however, has yet to theorize and test the effect of ethnic inequality on coups. The link is plausible because many coups are 'ethnic coups', which depend on the capacity of plotters to mobilize their co-ethnics. We argue that large income and wealth disparities between ethnic groups accompanied by within group homogeneity increase the salience of ethnicity and solidify within group preferences vis-à-vis the preferences of other ethnic groups, increasing the appeal and feasibility of a coup. We use group-level data for 32 sub-Saharan African countries and 141 ethnic groups between 1960 and 2005 and provide the first large-N test to date of the effect of ethnic inequality on coups. Between- and within- group inequality measures are constructed based on survey data from the Afrobarometer and the Demographic and Health Surveys. We find strong support for our hypothesis: Between-ethnic-group inequality (BGI) increases the likelihood that an ethnic group stages a coup only when within-ethnic-group inequality (WGI) is low. Coups remain frequent in sub-Saharan Africa and coups are the main threat to democracy in the region, by harming democratic consolidation and economic development, and by provoking further political instability. Our work provides a novel rationale to be concerned about ethnic inequality, showing that when ethnic and income cleavages overlap, destabilizing coups d'état are more likely.

Introduction

Inequality between ethnic groups increases the likelihood of civil wars (Cederman, Weidmann & Gleditsch, 2011; Østby, 2008; Stewart, 2000) and transitions from democracy to autocracy (Houle, 2015).[1] Despite coups and civil wars sharing a number of causes (Bodea, Elbadawi & Houle, *Forthcoming*; Collier, 2007; Cunningham & Lemke, 2014; Roessler, 2011), the literature on coups d'état has yet to examine the effect of ethnic inequality. The link is plausible, however, because many coups are 'ethnic coups,' to use the language of Decalo (1998) and Horowitz (1985), which depend on the capacity of coup plotters to mobilize their co-ethnics. Broadly we suggest that ethnic inequality affects the capacity of coup plotters to muster support from their co-ethnics and make an argument that is consistent with the classical literature on reinforcing and cross-cutting cleavages (Lipset & Rokkan, 1967; Rae & Taylor, 1970). That is, on the one hand, when ethnicity and inequality reinforce one another, ethnic groups become more likely to stage coups. On the other hand, however, the capacity of coup plotters to rely on the support of their co-ethnics weakens when ethnicity is cross-cut by inequality.

More specifically, the argument is that between-ethnic-group inequality (BGI) increases the likelihood of coups but that the magnitude of its effects weakens as within-ethnic-group inequality (WGI) increases. We identify two mechanisms driving the relationship. First, high BGI, when combined with low WGI, increases the salience of ethnicity by creating a clear demarcation between members of different ethnic groups. This, in turn, increases the capacity of coup plotters to build ethnic coalitions. Second, BGI widens the gap in the economic preferences of members of different ethnic groups, while low WGI levels homogenize the preferences of members of the same groups over economic policies. Therefore, when WGI is low, greater BGI increases the incentives of group members to support coup plotters from their own group in order to control the government.

[1] Ethnicity is 'a subjectively experienced sense of commonality based on a belief in common ancestry and shared culture' (Ethnic Power Relations data codebook, p. 2).

To test the effect of ethnic inequality on coups we construct measures of between- and within-group inequality based on survey data from the Afrobarometer and the Demographic and Health Surveys (DHS). The unit-of-analysis is the ethnic group-year and the empirical analysis covers 141 ethnic groups from 32 sub-Saharan African countries between 1960 and 2005. We estimate the effect of BGI and WGI on the likelihood that an ethnic group wages a coup. Coups and the ethnic identity of coup plotters are based on Roessler (2011). The findings support our hypothesis. Ethnic groups that are either much poorer or much richer than others in their country – i.e. that have high BGI – are more likely to stage coups. However, the effect of BGI on the likelihood that an ethnic group wages a coup weakens as inequality among its members (WGI) increases.

The empirical focus on Africa can be justified on several grounds. First, in sub-Saharan Africa ethnicity is generally the most salient cleavage (Emizet 1999). In fact, in Africa, coup plotters often rely on their co-ethnics as a source of support during and after a coup, whereas in other regions ethnicity may not be as relevant to coups (Harkness, 2016; Jenkins & Kposowa, 1992; Roessler, 2011). Second, on more practical grounds, coups are relatively frequent in Africa (Collier & Hoeffler, 2005) and while we have information on the ethnicity of coup plotters in Africa (from Roessler, 2011), we do not have such information for coups that occurred elsewhere, perhaps in large part because ethnicity is less relevant to coups outside Africa.

We make several contributions to the literature. First, we explore how inequality between and within ethnic groups interact which each other, whereas most (but not all) of the previous literature examine them separately. Second, we provide the first theoretical and empirical analysis of the effect of ethnic inequality on coups. While other authors have looked at the effect of ethnic inequality on civil wars, coups are fundamentally different from civil wars[2] and may, at least in principle, be caused by

[2] Coups are 'illegal and overt attempts by the military or other elites within the state apparatus to unseat the sitting executive' (Powell & Thyne, 2011: 252). Civil wars are conflicts that oppose the government and a politically organized group, involve mass participation and result in a minimum number of battle-related deaths. Empirically,

different factors (Powell & Thyne 2011). For example, Roessler (2011) shows that ethnic exclusion increases the risk of civil war but reduces that of a coup. Houle (2016) finds that while inequality between social classes breeds coups, it has little effect on civil wars.

Finally, coups remain frequent in sub-Saharan Africa (189 coups between 1950 and 2014; Powell & Thyne 2011, updated to 2015). Although the incidence of coups has decreased since the early 1990s, the region witnessed 32 coups in 19 countries between 2000 and 2014, or about 70 percent of all coups worldwide. In this context, our work provides a novel rationale to be concerned about ethnic inequality, showing that when ethnic and income cleavages overlap, destabilizing coups d'état are more likely. These findings contribute to understanding the structural conditions that are conducive to coups. Studying coups in sub-Saharan Africa is especially relevant because a large number of countries in the region have been making progress toward democracy recently and coups are the main threat to democracy. In fact, about three out of four transitions away from democracy is the result of a successful coup (Marinov & Goemans 2014). Not only do coups harm the prospect for stable democracy, but they also hinder state building and economic development (Collier, 2007; Londregan & Poole, 1990). Moreover, coups often provoke further political instability, in the form of civil wars, riots or other coups; potentially leading to a state of chronic political instability and low growth (Bodea, Elbadawi & Houle, *Forthcoming*; Collier, 2007; Londregan & Poole, 1990).

Previous literature

Inequality and coups

There are few studies on the relationship between inequality and coups. Collier & Hoeffler (2005) find that inequality, measured with Gini coefficients, is unrelated to coups in sub-Saharan Africa. Houle

Powell and Thyne (2011) spend a considerable effort delimiting coups from civil wars, e.g. reporting that 38 armed conflicts in the UCDP/PRIO Armed Conflict Dataset – which is often used to capture civil wars – are actually coups.

(2016) uses three different measures of inequality – capital shares, top one percent share of income, and Gini coefficients – and finds that inequality is positively correlated with the likelihood of a coup in a global sample. Svolik (2012) finds an inverted U-shaped relationship between inequality and coups among autocracies.

Boix (2003) and Acemoglu & Robinson (2006) theorize that inequality between social classes increases the likelihood that a democracy breaks down. According to them, inequality increases the willingness of the upper class to stage a coup against a democracy – in which the tax rate is determined by the median voter – in order to install an autocracy which limits redistributive policies. However, Boix (2003) and Acemoglu & Robinson (2006) only apply their argument to right-wing coups that are waged against democracies. They examine the effect of inequality on democratic reversals – which are usually (but not always) caused by coups – but not coups per se. Houle (2009) shows also that inequality indeed increases the likelihood that a democracy collapses.

None of these studies investigate the effect of inequality *between ethnic groups* on coups. Yet in many instances, especially in sub-Saharan Africa, coups are waged by actors that directly appeal to ethnic interests to form a ruling coalition (Roessler, 2011). Houle (2015) is probably the study that is most closely related to ours. He examines the effect of ethnic inequality on the consolidation of democracy. He finds that BGI increases the likelihood that a democracy collapses and that the effect of BGI is stronger at low WGI levels. However, there are important differences between our study and his. For one, we explain different outcomes: Coup d'état is not the same as a democratic reversal. Some transitions away from democracy are caused by civil wars or protests. Others are caused by *executive* coups (or self-coups) – in which the elected officials retain power – rather than military coups, which are the focus of this study. And executive coups may have different causes. Finally, Houle (2015) does not theorize or empirically test the effect of between-ethnic-group inequality on coups in non-democracies.

His causal mechanisms are largely driven by the Meltzer & Richard (1981) model which only directly applies to democracies.

Ethnic inequality and civil conflicts

Although there are no studies of the effect of ethnic inequality on coups, there is a rich related literature on the effect of inequality between ethnic groups – or, in other words, horizontal inequality – and civil war onset (e.g., Cederman, Weidmann & Gleditsch, 2011; Østby, 2008; Stewart, 2000). These authors find that BGI increases the likelihood of civil war. Related, Morelli & Rohner (2015) find that oil and gas discovery within a region controlled by an ethnic group increases the likelihood that this group gets involved in a civil war. Moreover, Guariso & Rogall (2016) examine the effect of the distribution of rainfall across regions, and find that ethnic groups are more likely to engage in civil conflicts when they receive less rain than other groups from the same country. Others study the effect of inequality between alternative, non-ethnic, groups, such as inequality between religious groups or regions of the same countries. These studies tend to find that inequality between groups fosters civil conflict (e.g., Østby, Nordås & Rød, 2009).

While most authors agree that BGI increases the likelihood of civil war, there is disagreement regarding the effect of WGI. A first group of authors argues that the positive effect of BGI on civil wars strengthens as WGI increases (Esteban & Ray, 2011; Kuhn & Weidmann, 2015). The argument is that waging a full-scale war requires the capacity to pay rebels. At any given income per capita level, increasing WGI reduces the opportunity cost of potential recruits. Moreover, high WGI, by concentrating wealth among a small number of people, creates a wealthy elite with enough resources to finance the war. Within-group inequality is thus argued to foster conflict by helping to *finance* a large fighting force.

A second argument builds on the literature on reinforcing and cross-cutting cleavages (Lipset & Rokkan, 1967). It posits that BGI increases the likelihood of a civil war but that its effect weakens as WGI

increases, notably because it reduces within-group cohesion (Gubler & Selway, 2012; Stewart, 2000; Horowitz, 1985). In other words, inequality is argued to be more likely to instigate a civil war when it is reinforced by other cleavages, such as ethnicity.

The evidence thus far is mixed. Because of the lack of data on WGI, only Kuhn & Weidmann (2015) directly test whether the effect of BGI on the likelihood that groups initiate civil wars is conditional on WGI. They find that BGI's effect increases with WGI. Huber & Mayoral (2014) also look at whether BGI and WGI foster civil wars but they do not examine whether the effect of BGI is conditional on WGI. They find that while WGI increases the likelihood of a civil war, BGI has no discernable effect. Finally, Gubler & Selway's (2012) indicators measure the extent to which ethnicity and class cross-cut or reinforce each other within a country-year. Consistent with the second argument, they find that countries in which ethnicity and inequality reinforce one another are more likely to experience civil wars.

Ethnic inequality and coups in Sub-Saharan Africa

The argument developed in this section on the effect of ethnic inequality on coups draws on the literature on ethnic inequality and civil wars discussed above. Recall that a first group of authors argues that WGI increases the capacity to finance a large fighting force, and so that BGI's positive effect strengthens as WGI increases. To the contrary, the second argument is that low WGI magnifies the effect of BGI because under such conditions ethnicity and inequality reinforce one another.

We argue that the argument of the first group of authors – while highly relevant to the question of civil wars – cannot be easily applied to the study of coups. This is because coups and civil wars are fundamentally different (see footnote 2). First, while coups are driven by regime insiders, civil wars necessitate the participation of outsiders (although they can also involve insiders). According to Morrison & Stevenson (1971: 13), one of the definitional features of coups is that they take place

'without overt mass participation'. Second, coups, contrary to civil wars, do not necessarily involve violence, and very rarely involve prolonged fighting. Third, another distinction is the role of the military: while the military is typically the actor that tries to overthrow the government during coups, it is the main agent that fights against insurgents and protects the government during civil wars (Houle, 2016).

The differences between coups and civil wars have important theoretical implications for the effect of BGI/WGI on coups.[3] Since, unlike civil wars, coups rarely involve prolonged fighting they do not require large fighting forces and finances. Coups typically take place over very short periods of time, involve a very small number of actors and, in many instances, do not involve combat at all. Therefore, the argument that WGI increases the capacity to *finance* an army by decreasing the opportunity cost of potential recruits is largely irrelevant to coups.

The arguments of the second group of authors, however, are relevant to the question of the effect of BGI and WGI on coups. Staging a successful coup and establishing a new regime typically requires that coup plotters – usually military officers – be able to form a coalition. No political regime, even if authoritarian, can be installed and sustained without the support of a ruling coalition (Bueno de Mesquita et al. 2003). In sub-Saharan Africa, these coalitions are often based on a common ethnic identity (Harkness, 2016; Jenkins & Kposowa, 1992; Lindemann, 2011; Odeyemi, 2014; Roessler, 2011). Most regimes in sub-Saharan Africa rely on neo-patrimonial rule, in which patronage is distributed along ethnic lines. Case studies indeed show that ethnicity plays a key role during coups in Africa.[4]

An early literature posits an effect of social mobilization and structure – usually measured with ethno-linguistic fractionalization (ELF) indices – on coups. Most authors find little support for the notion that ethnic diversity fuels coups, although some find a positive relationship (Collier & Hoeffler, 2005,

[3] We are not arguing that ethnic inequality necessarily has different effects on coups and civil wars. In fact, our findings (Online Appendix, Section 5), suggest that the effect of BGI on civil wars mirrors its effect on coups. However, coups and civil wars are separate forms of violence whose underlying structural determinants need to be understood distinctly, even if, some structural factors prove to work in similar ways.

[4] Cox (1976) on Sierra Leone; Lindemann (2011) on Uganda; Hutchful (1985) on Ghana; Diamond (1988), and Odeyemi (2014) on Nigeria.

Jackman, 1978). However, measures of ethnic fractionalization do not capture arguments made about the role of ethnicity during coups. It is not ethnic diversity per se that leads to coup, according to this argument, but tensions between ethnic groups. As argued by Harkness (2016*:* 591), 'there is no compelling theoretical story linking such measures to the actions of military officers'.

Instead of looking at ethnic diversity, we examine the factors that can motivate members of a given ethnic group to support coup plotters from their group. We argue that, when WGI is low, increasing BGI should increase the incentives of co-ethnics to support potential coup plotters. We identify two main mechanisms through which the effect of BGI on coups could operate. We explain them below.

First, BGI magnifies in-group loyalties when WGI is low (Gubler & Selway, 2012; Houle, 2015; Selway, 2011; Stewart, 2000). High income disparities between groups and egalitarian conditions inside ethnic groups create shared histories of grievance or affluence increasing in-group loyalties. Individuals are more likely to feel close to other members of their own group but fundamentally different from members of other groups when (1) they share the same living conditions as other members of their group (WGI is low), and (2) live under very different economic conditions from members of other groups (BGI is high).

This argument builds on the celebrated literature on the structure of cleavages according to which an individual's loyalty to other members of his/her group along one cleavage (e.g., ethnicity) increases if they also share membership with the same group on other cleavages (e.g., social class) (Lipset 1960; Rae & Taylor 1970). This literature thus predicts that, on the one hand, a cleavage becomes more destabilizing when it is reinforced by other cleavages. On the other hand, however, a cleavage becomes less threatening when it is cross-cut by another cleavage, such that, for example, members of the different ethnic groups find themselves in the same social class. A large literature makes the related

argument that ethnicity, in particular, becomes more important when it is reinforced by other cleavages, such as social class, religion or geographic location (Diamond, 1988; Dunning & Harrison, 2010; Houle, 2015; Lipset, 1960; Selway, 2011).

Therefore, we expect BGI to increase the political salience of ethnicity, especially when WGI is low. When ethnicity is more salient, in turn, it is easier for coups plotters, including military officers, to build coalitions based on ethnic appeals; hence increasing the likelihood of a coup. In societies in which ethnicity is highly salient, ethnic identity often determines access to patronage or military careers, which increases the incentives of members of a given ethnic group to support co-ethnics wanting to usurp power through a coup (Harkness, 2016; Houle, 2015).

The second mechanism operates through the effect of BGI on *preferences over economic policies*. BGI widens the gap in the preferences of different groups over economic policies, increasing their incentives to support coup plotters from their own group. Imagine a situation in which there are two ethnic groups (*A* and *B*) and the regime is dominated by group *A*. If group *B* is poorer than group *A,* between-group inequality increases the incentives of members of group *B* to seize power. Holding office would enable them to redistribute wealth from members of group *A* toward themselves. A high BGI level may also create grievances among members of group *B*. If group *B*, on the other hand, were richer than group *A*, then its members would have incentives to take power in order to prevent redistribution to members of group *A*.

Our second argument is an extension of Acemoglu & Robinson (2006) and Boix (2003) on the effect of inter-group inequality on democratic breakdowns, which they model as coups. Since the relevant groups in sub-Saharan Africa are often ethnic groups, the implication is that inequality between ethnic groups fuels coups. Moreover, for our argument, it does not matter whether the regime is democratic or authoritarian. In the framework of Acemoglu & Robinson (2006) and Boix (2003) the key difference between autocracies and democracies is that while in the former redistributive policies are

selected by the rich elites, in the latter they are chosen by the median voter. However, when the relevant groups are ethnic groups, rather than social classes, this clear distinction between democracies and autocracies vanishes. Under both types of regime, the ethnic group(s) that controls the executive selects policies.

The effect of BGI on the incentives of members of group *B* to support coup plotters is, however, conditional on inequality among its own members (WGI). Assume that potential coup leaders consider forming a coalition based on their ethnicity. For simplicity, further assume that in order to do so, they need to propose a post-coup economic policy that satisfies a large portion of the members of the group. Increasing WGI reduces the capacity of coup plotters to find such a policy because different groups members will have very different preferences. In fact, when WGI is high, some members of group *B* may prefer the policies of the previous regime. In other words, high WGI leads to heterogeneous preferences within a given ethnic group; which decreases the capacity of its members to unite to support a coup.

Crucially, we are not denying that coups are often the results of intra-elite conflicts, and our theory does not need the strong assumption that coup plotters are motivated by the welfare of their co-ethnics. In particular, we do not assume that military officers as well as other regime outsiders are willing to compromise their privileged economic position just because their group is much richer or much poorer than other groups. Instead, our argument is that the structure of ethnic inequality produces conditions conducive to coups by increasing the motivation inside homogenous ethnic groups to back a coup and thus creating a potential source of support on which coup plotters can rely both during and after the coup. In other words, a high BGI combined with a low WGI creates *opportunities* for potential coup leaders to increase their own welfare. Coup plotters can be motivated by factors other than ethnic inequality, such as holding office and having access to all the benefits it provides.

Finally, as discussed above, the vast majority of coups are staged by members of the military. This raises the question of whether the ethnic composition of the military conditions the effect of ethnic

inequality. For one thing, an ethnic group cannot stage a military coup if it is completely excluded from the military. For example, Lindemann (2011) argues that one of the factors that explain why Idi Amin, in Uganda, did not experienced a coup is that he stacked the military with other members of groups from the West Nile (mostly Kakwa). This issue is further addressed in the empirical analysis, where we use exclusion from the government as a proxy for exclusion from the military, even though we acknowledge and discuss the problematic nature this equivalence.

Data

The unit-of-analysis is the ethnic group-year. Our main sample consists of about 4,350 observations on 141 ethnic groups between 1960 and 2005. It covers 32 sub-Saharan African countries. These countries are listed in Table A2 of the Online Appendix. Ethnic groups are identified using the Ethnic Power Relations (EPR) dataset. We only include those that are classified as politically relevant in the EPR dataset. Most countries that are left out of our sample are excluded because they are coded as ethnically homogenous in the EPR dataset (e.g., Lesotho and Burkina Faso). Also, following Cederman, Weidmann & Gleditsch's (2011) study of the effect of inequality between ethnic groups on civil wars, we exclude all ethnic groups that have a status of 'dominant' or 'monopoly' in the EPR dataset. It seems implausible that inequality between ethnic groups will entice such groups to stage a coup, since they already have exclusive control over the executive.

Dependent variable

The dependent variable takes the value one if a member of an ethnic group has staged a coup within a given year. This variable is from Roessler (2011), who gives the ethnicity of coup plotters for all successful and failed coups in sub-Saharan Africa from independence to 2005. Section 3 of the Online Appendix lists all coups covered by the analysis.

Independent variables

We construct our indicators of BGI and WGI using a methodology similar to Houle (2015) and rely on the Afrobarometer and the Demographic and Health Surveys (DHS). The surveys available for each country are listed in Table A2. The Afrobarometer and DHS do not have questions on the income of the respondents. However, in sub-Saharan Africa, most of the income is not monetized. Therefore, monetized income would be a poor measure of real income in these countries (Baldwin & Huber, 2010; Bratton, 2008). Instead, the literature typically uses questions on asset ownership to measure wealth (Dionne, Inman & Montinola, 2014; Houle, 2015; Østby, 2008). Of note, Houle's (2015a) dataset covers only democracies and our data measures BGI and WGI in nondemocracies as well. Moreover, we adopt a slightly different measure of BGI (Equation 1).

The Afrobarometer asks questions about whether the respondents own a radio, a television and a motor vehicle. We use that information to build an indicator of asset-based wealth (ABW) ranging from 0 to 3, where 3 indicates that the respondent owns all three goods. Similarly, the DHS has questions about whether the respondents own a refrigerator, a television, a radio, a bicycle, and a car, and whether they have access to electricity. For each respondent, we compute an indicator ranging from 0 to 6, where 6 indicates that the respondent has access to all of these goods.

The Afrobarometer and the DHS also ask a question about the ethnicity of the respondents. After matching the ethnic groups of the surveys with those of the EPR, we compute measures of BGI and WGI for each ethnic group. We measure BGI of ethnic group *l* of country *v* as follow:

$$B \quad I_{l,v} = \left[l\alpha \quad \left(\frac{\bar{g}_{l,v}}{\bar{G}_{-l,v}} \right) \right]^2 \tag{1}$$

Where $\bar{g}_{l,v}$ refers to the average ABW score of members of group *l* of country *v* and $\bar{G}_{-l,v}$ to the average ABW score of members of *other* groups from country *v*. BGI captures the difference in asset-based wealth between an average member of a given group and an average individual from the same country

but from a different ethnic group. Our formula is very similar to that employed by Cederman, Weidmann & Gleditsch (2011) and Houle (2015). The only difference is that in our case $\bar{G}_{-l,v}$ gives the average wealth of individuals from the same country but different ethnic groups, while they use the average wealth of *all* individuals from that country (including the group for which they are calculating BGI). Using all citizens biases BGI downward for large groups because they have a larger weight and our formulation avoids this source of measurement error.

The within-ethnic-group inequality (WGI) of a given ethnic group is calculated as the Gini coefficient among all of its members. For all countries, we first group all members of each ethnic group, and then calculate a Gini coefficient for each group separately. The Gini coefficient is computed using the command -ineqdec0- in STATA. Each group of a given country has a different WGI value. The Gini coefficient is computed using the following formula:

$$W\ \ I_{l,v} = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}|g_{i,l,v}-g_{j,l,v}|}{2\ n^2\ \bar{g}_{l,v}} \qquad (2)$$

Where $g_{i,l,v}$ is the ABW score of member *i* of group *l* of country *v*; $g_{j,l,v}$ is the ABW score of member *j* of the same group (*l*) / country (*v*); and *n* is the total number of individuals in group *l*.

We take advantage of the fact that the Afrobarometer and DHS cover many of the same countries to standardize the observations across data sources. The correlation between the BGI values calculated from the two sources is 0.56 and that between the two WGI series is 0.52. To show that our results are not dependent on the way we standardize the observations, the Online Appendix shows that the findings are unchanged when we only use data from the Afrobarometer (Table A3) or the DHS (Table A4). In Table A6, we demonstrate that the results are unchanged if we use multiple imputation to standardize the observations (using *Amelia II*). Section 2 of the Online Appendix details the computation of the key independent variables and the method we use to standardize the data.

The main limitation with our dataset is the lack of survey data for each country in every year. Each country has been surveyed only a few times over our sample years (sometimes only once) and we use interpolation for years between surveys. For years before (or after) the first (last) survey, we use the survey that is closest in time. This method is imperfect but it is important to note that inequality is notoriously sticky over time. In fact, this problem plagues all existing datasets on inequality between or within ethnic groups. For example, Cederman, Weidmann & Gleditsch (2011), Kuhn & Weidmann (2015), and Gubler & Selway (2012) use a single value on each unit (ethnic group or country) for all years in their analyses.

A potential problem with our approach is that in many instances, we use data that were collected after a coup to predict the effect of BGI/WGI on the likelihood of the coup occurring, which could create an endogeneity bias. After a coup, coup leaders may favor members of their own group, which would increase its income. If the group is richer than the other groups of the country (i.e. if $\bar{g}_{l,v}$ is greater than $\bar{G}_{-l,v}$ in Equation 1) that would increase BGI. Therefore, BGI may be the consequence rather than the cause of the coup. Although this could be an important limitation, there are three reasons why we do not believe that it drives our results. First, there is evidence that ethnic inequality substantially predates the foundation of states (and therefore, coups). Across a global sample, Alesina, Michalopoulos & Papaioannou (2016: 428) study 'establish that differences in geographic endowments across ethnic homelands explain a sizable fraction of the variation in economic disparities across groups'. Thus, resource endowments rather than political power seem to be the main determinant of ethnic inequality.

Second, as explained above, reverse causation can only bias our results upward among rich groups. Increasing the income of a poor group after a coup would instead *decrease* its BGI. Yet our empirical analysis (Model 4, Table 1) shows that the effect of BGI is not conditioned by income in a

statistically significant way, although the effect is somewhat stronger among poor groups. Therefore, reverse causation, if any, most likely bias our results *downward*.

Third, we perform additional robustness tests: Since our first survey was conducted in 1986, in Table A7 of the Online Appendix, we redo the analysis for the post-1986 period. Also, we rerun the analysis with only observations that follow the first survey for each country (Table A8). Our results are robust, although Table A8 should be interpreted with caution since the number of coups decreases drastically. Section 2 of the Online Appendix provides further detail.

There are two other published group-level datasets that include measures of *both* BGI and WGI: Houle (2015) and Kuhn & Weidmann (2015).[5] As explained above, our methodology is similar to that of Houle (2015). However, our data measures between- and within-ethnic-group inequality in democracies as well as dictatorships, whereas he only covers democracies. In addition, as noted above, the way we compute BGI differs somewhat (see Equation 1), making our measure less prone to a downward bias estimate for BGI. Moreover, our measures use more surveys than Houle (2015). Therefore, our indicators vary more within countries over time. Finally, Houle (2015) uses the DHS as his main survey and standardizes observations from the other data sources (e.g., Afrobarometer, Latinobarometer) to make them comparable. Instead, we use the Afrobarometer as our main survey and standardize observations from the DHS, although our results are unchanged if we follow Houle (2015) and use the DHS (Table A5).[6] Baldwin & Huber (2010) also provide measures of BGI (but not WGI) based on survey data, but their indicators are aggregated at the country-level.

Kuhn & Weidmann (2015) develop an alternative dataset that does not rely on surveys. Instead, they combine data on nightlight emissions with maps on ethnic group settlement to calculate measures

[5] Huber and Mayoral (unpublished, 2014) use several surveys, including the Afrobarometer and the DHS, to construct indicators of BGI and WGI.
[6] Houle (2015) covers only 450 observations in sub-Saharan Africa due to its focus on democracies.

of BGI and WGI. A similar methodology is followed by Cederman, Weidmann & Gleditsch (2011) and Alesina, Michalopoulos & Papaioannou (2016), who provide measures of BGI (but not WGI).[7]

Although there are a number of advantages to relying on the spatial dispersion of groups to create measures of BGI and WGI, such approaches have important limitations (Huber & Mayoral 2014). These measures are particularly problematic in instances in which multiple ethnic groups live in the same areas. In those cases, it is impossible to differentiate between inequality across and within ethnic groups. Authors relying on these methods have to assume either that each area is ethnically homogeneous or that inequality between members of different ethnic groups within a given area is the same as inequality among members of the same ethnic group (Huber & Mayoral 2014). In fact, when calculating WGI, Kuhn & Weidmann (2015) dismiss all urban areas because it would be impossible to distinguish between WGI and BGI among urban dwellers. Indicators relying on survey data do not suffer from these limitations.

The correlation between our measures of BGI and WGI and those of Kuhn & Weidmann (2015) are 0.23 (p-value<.001) and 0.31 (p-value<.001), respectively. We run our main analysis with the indicators of Kuhn & Weidmann (2015) (Table A10). Results using all coups (including failed coups) are consistent with our hypothesis, but not those in which the sample is restricted to successful coups. Nevertheless, it must be noted that the sample size decreases by nearly 70 percent (from 4,352 to 1,311 observations), which may explain why the findings on successful coups differ.[8]

Others, such as Cederman, Weidmann & Gleditsch (2011) and Østby (2008), have developed measures of BGI. However, they do not provide measures of WGI. Finally, Gubler & Selway (2012) use a number of surveys (including the Afrobarometer) and construct country-level indicators of cross-cuttingness. These indicators measure the extent to which ethnic identity predicts class affiliations and vice versa within a country.

[7] Cederman, Weidmann & Gleditsch (2011) use the spatial dispersion of wealth rather than nightlight emissions.
[8] The main analysis (Model 6, Table 1) covers 41 successful coups. Table A10 covers only 7.

Control variables

We control for the country-level variables that are usually employed in studies on coups: GDP per capita logged (Treisman 2015), ethnic fractionalization (Przeworski, Alvarez & Cheibub 2000), trade openness (exports plus imports divided by GDP; World Bank), military expenditure per capita and military personal per capita (Correlates of War), the Polity score and its square, and dummy variables for military regimes (Banks CNTS Data) and former British colonies (Przeworski, Alvarez & Cheibub 2000). We also control for regime instability, which takes the value one if a country has experienced a change in Polity IV of three points or more over the last three years. We include a dummy variable *Power Sharing* that takes the value one if the executive is shared among multiple ethnic groups (EPR data). Since the likelihood of coup varies across the period studied, we control for the year and a dummy variable for the cold war period. We also control for the time since the last coup with cubic splines.

Finally, we include three group-level control variables. The first gives the size of the ethnic group (EPR data). Second, we include a dummy variable (*Poor*) that takes the value one if the average ABW score of the group is lower than the average ABW score of other groups from the same country (i.e. $\bar{g}_{l,v}$ is smaller than $\bar{G}_{-l,v}$ in Equation 1). Ethnic inequality could cause more grievances among poor groups. Nonetheless, ethnic inequality could also incite rich groups to stage coups since it increases the stakes of controlling policies. For example, controlling the regime can enable rich groups to limit redistribution toward poor groups.

Third, we include a dummy variable *Excluded* that takes the value one if an ethnic group is not represented within the executive (EPR data). Excluded groups are those that have a status of 'discriminated', 'powerless' or 'regional autonomy'. We have mixed expectations regarding this variable. On the one hand, as argued by Roessler (2011), groups that are excluded from the executive may not have the means to stage a coup. On the other hand, however, one could argue that groups that are excluded have more incentives to stage a coup.

Empirical results

Main analysis

Table 1 presents probit regressions of the effect of BGI on coups along with robust standard errors clustered on country. All explanatory variables are lagged one year. We first run the analysis without control variables.[9]

[Table 1]

Model 1 tests our hypothesis that the effect of BGI is conditional on WGI by adding an interaction term between BGI and WGI. We expect that the coefficient on *BGI* is positive while the one on *BGI * WGI* is negative. Both variables have the expected signs and are statistically significant at the one percent level. We also compute joint significance tests of *BGI* and *BGI * WGI*. In Model 1, the chi-squared statistic is 27.76 and is statistically significant at the one percent level. Model 2 shows that the results are unchanged when we add the control variables.

[Figure 1]

Figure 1 gives the marginal effect of *BGI* on the likelihood of a coup across *WGI* values, along with 95 percent confidence intervals (based on Model 2).[10] The marginal effect for Models 1, 3 and 6 are in the Online Appendix (Figures A5-A7). As shown in Figure 1, *BGI* increases the likelihood of a coup until *WGI* is about 0.35, which corresponds to the 40th percentile of the distribution. When *WGI* attains about 0.45, *BGI reduces* the probability of a coup. About 20 percent of the observations have *WGI levels* above 0.45. This is consistent with our hypothesis and reflective of the argument about cross-cutting and reinforcing cleavages. When WGI is very high, increasing BGI may hinder the formation of cross-

[9] We test the effect of BGI on coups, without the interaction term BGI*WGI (Table A23). BGI does not affect coup likelihood.

[10] We use Matt Golder's code: http://mattgolder.com/files/interactions/interaction3.pdf. Control variables are set at their mean or median. In nonlinear models, the marginal effect of a variable varies with its level. All marginal effect figures evaluate the marginal effect of *BGI* at its mean.

ethnic coalitions. In other words, members of the same social class but different ethnic groups have a harder time forming a coalition to mount a coup when ethnicity and inequality cross-cut each other.

[Figure 2]

Figure 2 shows the effect of *BGI* on the predicted probability that an ethnic group will stage a coup at low (5th percentile) and high (95th percentile) *WGI* levels. When *WGI* is low, increasing *BGI* from the 25th to the 75th percentile increases the likelihood of a coup by more than 30 percent *per year*. When *WGI* is high, however, the same change in *BGI* would actually reduce the likelihood of a coup.

Model 3 of Table 1 redoes Model 2 with country fixed effects. The sample size decreases substantially because a number of countries (e.g., Senegal) never experienced a coup. Results, however, are unchanged. Models 1-3 control for whether an ethnic group is poor. Yet the effect of BGI may be *conditional* on whether an ethnic group is poor or rich. Inequality may generate more grievances among poor groups. However, BGI may also impact rich groups by increasing their incentives to control the regime. For example, ethnic inequality did play a crucial role in the coup (as well as the subsequent civil war) by the Igbo – a 'rich' group – in Nigeria in 1966 (Diamond 1988). Model 4 redoes Model 2 with interaction terms between *BGI*/*WGI*/*BGI*WGI* and *Poor*. We find evidence that the effect of ethnic inequality is somewhat stronger among poor groups, although the difference is negligible.[11]

As explained above, the capacity of an ethnic group to stage a coup depends on whether it is represented in the military. Unfortunately, we do not have data on the representation of each ethnic group covered by the analysis in the military during the full period. Therefore, we use the *Excluded* variable (constructed from the EPR) as a proxy for whether a group is excluded from the military. Model 5 redoes Model 2 with interactions terms between *BGI*/*WGI*/*BGI*WGI* and *Excluded*. BGI increases the likelihood among all groups, but, its effect is strongest among excluded groups.

[11] The coefficient on *BGI*Poor* is positive but fails to attain statistical significance, while that on *BGI*WGI*Poor* is negative but only significant at the ten percent level. The effect of BGI on coups does not appear thus to be strongly conditioned by our group level poverty indicator.

These results should be interpreted with caution because groups that have a status of 'dominant' or 'monopoly' – and that are often significantly overrepresented in the military – are omitted from the analysis. Moreover, the *Excluded* indicator may be a poor proxy because in many instances the ethnic composition of the military may differ from that of the government – which is what *Excluded* captures. It is precisely under such conditions that some authors have argued that coups are the most likely (Lindemann, 2011). Finally, this variable does not capture attempts by the ruler to change the ethnic composition of the military, which is often at the origin of coups (Harkness, 2016). In fact, a group would be coded as excluded in the EPR at the time when it is purged from the military – and thus most likely to stage a coup. In our data, groups excluded in the previous 5 years from power have around a 5 percent probability of staging a coup each year, whereas that probability is around 1.5 percent for included groups (but that are not 'dominant' or 'monopoly') and 1.9 percent for groups that have been excluded for longer than 5 years. Table A24 of the Online Appendix shows that BGI's effect is indeed stronger among groups that have been excluded in the previous 5 years.

We acknowledge that more details on the ethnic composition of the military would strengthen our study, and believe that this issue should be further investigated in the future. Such work could clarify for example, what is the relationship between political exclusion from power and the speed of purges from the military and explain why inequality in recently excluded groups presents a high risk of coup d'état.

Models 1-5 use both successful and failed coups. One potential concern with including failed coups is that a coup may have failed precisely because coup plotters were unable to gather support from their co-ethnics. Model 6 redoes Model 2 using only successful coups (Table A22 of the Online Appendix redoes other models with only successful coups) and our results continue to hold.

The main text focuses on the effect of BGI on coups at different levels of WGI. However, in many models, WGI also has a positive effect on coups when BGI is low. Section 4 of the Online Appendix

discusses the effect of WGI on coups. We show that, consistent with our argument, WGI reduces the likelihood of coups when BGI is high.

Finally, in Section 5 of the Online Appendix, we test the effect of ethnic inequality on civil conflict. We find that, as for coups, BGI increases the likelihood of civil conflict when WGI is low, but that its effect weakens as WGI increases. These findings contradict those of Kuhn & Weidmann (2015), but are consistent with those of Stewart (2000) and Gubler & Selway (2012), among others.

Robustness tests

The Online Appendix presents additional robustness tests that address threats to inference related to (i) the coding of the key explanatory variables; (ii) our ability to create reliable BGI and WGI measures for small ethnic groups with low numbers of survey respondents; (iii) the presence of outliers; (iv) the exclusion of dominant groups in our models; (v) the inclusion of democracies; (vi) the omission of some possibly important control variables; (vii) the use of clustered standard errors with a small number of clusters; and (viii) collinearity between our measures of BGI and WGI.

First, one could argue that the different items used to measure the wealth of the respondents should have different weights. For example, owning a car may have a larger effect than owning a bicycle. We recalculate the indices using multiple correspondence analysis (MCA) rather than simply giving a weight of one to each component. MCA is similar to principal component analysis but is preferable when the components are dummy variables. We estimate the weight of each item using the -mca- command in STATA, and recalculated BGI/WGI. Table A9 redoes the main analysis (Models 2 and 6 of Table 1) with these indicators. The results are unchanged.

Table A13 redoes the analysis without groups that represent less than five percent of the population of their countries. Since the dataset is constructed from survey data, our values on BGI and WGI for these groups often rely on few respondents. Also, there are a number of groups with very high BGI levels (Figure A1). Table A14 redoes our main models without observations with BGI values above

the 99th or 95th percentile of the distribution. Furthermore, Table A15 excludes each country in succession. For example, Models 1-2 drop all observations from Benin. All results remain unchanged.

Consistent with the literature, groups that are classified as 'monopoly' or 'dominant' in the EPR are omitted from the main analysis. Table A16 shows that the results are unchanged when these groups are included in our data. Table A18 demonstrates that the results are also robust to the exclusion of democracies (countries with Polity scores above 6).

Table A19 includes additional control variables: Transitory economic shocks (measured as economic growth); dummy variables for whether a country has held an election in the same year (Hyde & Marinov 2012) and for whether there is an ongoing civil conflict (UCDP/PRIO Armed Conflict Dataset) and an ongoing international war (Correlates of War). Table A20 controls for counterbalancing – a form of coup-proofing – which measures the number of branches into which the military and paramilitary are divided (Pilster & Böhmelt 2012). Table A17 uses the X-Polity score of Vreeland (2008) instead of the regular Polity score. All results are unchanged.

Our estimations employ robust standard errors clustered by country. However, our main models cover only 32 countries. Using clustered standard errors with a small number of clusters may lead to incorrect inferences (Esarey & Menger 2016). Table A21 uses clustered standard errors adjusted for small number of clusters. The models are estimated using the -clustse- command in STATA. Results are unaltered.

Finally, we examine whether our results are affected by multicollinearity between *BGI* and *WGI* (correlation 0.37). We rerun Model 2 of Table 1 using OLS (without the splines, and *BGI***WGI*) and calculate the variance inflation factor (VIF) of all variables included in the model. No variable has a VIF above 10, which is the threshold usually used to detect multicollinearity. The VIFs of *BGI* and *WGI* are 1.45 and 2.26, respectively.

Conclusion

We argue that the mapping of ethnicity on top of income inequality affects the capacity of would be coup plotters to muster support from their co-ethnics, and is therefore a predictor of which ethnic groups would be likely to part-take in a coup. Thus we argue that ethnic groups with high BGI are more likely to wage coups but that the effect of BGI strengthens as WGI decreases. This happens because large income and wealth disparities between ethnic groups accompanied by within group homogeneity increase the salience of ethnicity and solidify within group policy preferences vis-à-vis the preferences of other ethnic groups, increasing the appeal and feasibility of a coup. While our data has the limitations explained above, the empirical evidence from 141 ethnic groups in 32 sub-Saharan countries between 1960 and 2005 supports this hypothesis. In addition to linking ethnic inequality to coups, we also find that BGI is conditioned by WGI in similar ways for civil wars, supporting the literature finding that cross-cutting cleavages reduce the risk of conflict. Although they are distinct forms of conflict in terms of aims, financing needs, or mass participation, coups and civil wars are similarly influenced by overlapping income disparities and ethnic affiliation.

Our results suggest that, in addition to other structural determinants, the coup literature ought to pay more attention to the economic and social conditions that are most conducive to coups. While the research on coups has been rapidly expanding over the last decade, few authors examine the question of the effect of factors such as inequality or ethnic divisions on coups.[12] In most instances, these variables are not even included as controls (e.g., Belkin & Schofer, 2005; Powell, 2012). This is in stark contrast with the early literature that did look at factors such as ethnic divisions (e.g., Jackman, 1978, Johnson, Slater & McGowan, 1984). This is particularly puzzling given that coup plotters often rely on the support of their co-ethnics both during and after the coup. It is also puzzling, because a pattern of recurrent coups among a limited number of ethnic groups (11 out of the 141 groups, or about 8

[12] Harkness (2016) and Roessler (2011) are exceptions.

percent of the groups, are responsible for nearly 50 percent of the coups) suggests a role for slowly changing structural conditions, like ethnic inequality. In this paper, we have argued and shown that an ethnic group is more likely to stage a coup when ethnic divisions are reinforced by economic inequality. These results suggest that coups are not only driven by purely intra-elite factors and that the literature should consider more carefully the role and the overlap of economic and social cleavages that are favorable to coups.

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Replication data

The dataset, do-files for the empirical analysis and an Online Appendix, are at http://www.prio.org/jpr/datasets. All analyzes use STATA.

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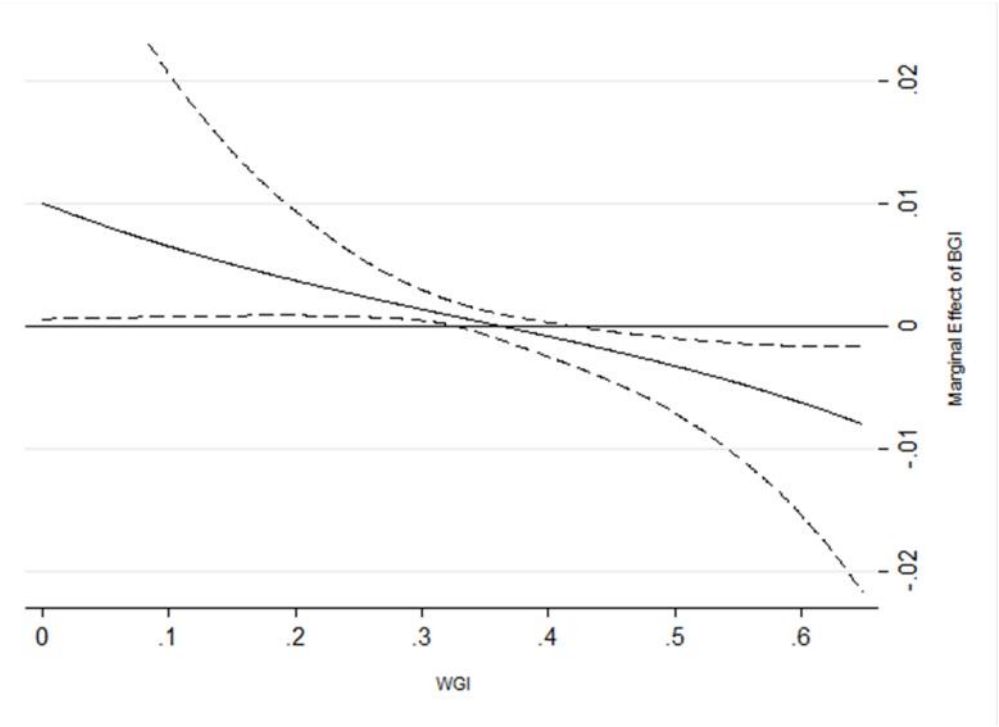
Table 1: Probit Analysis of the Effect of BGI on Coups

	All Coups					Successful Coups
	(1)	(2)	(3)	(4)	(5)	(6)
BGI	0.404**	0.412**	0.258**	0.019	0.230*	0.485**
	(0.080)	(0.073)	(0.079)	(0.166)	(0.108)	(0.141)
WGI	2.291**	2.024*	3.511*	1.813†	2.226	2.300†
	(0.725)	(0.988)	(1.470)	(0.971)	(1.400)	(1.355)
BGI*WGI	-1.072**	-1.133**	-0.721**	0.266	-0.562†	-1.322**
	(0.227)	(0.220)	(0.213)	(0.597)	(0.331)	(0.422)
Poor		-0.113	-0.303†	-0.734	-0.102	-0.192
		(0.109)	(0.157)	(0.636)	(0.111)	(0.176)
BGI*Poor				1.518		
				(0.987)		
WGI*Poor				1.690		
				(1.426)		
BGI*WGI*Poor				-4.085†		
				(2.266)		
Size		0.866**	0.988**	0.873**	0.878**	0.858**
		(0.193)	(0.287)	(0.199)	(0.195)	(0.246)
Excluded		0.227	0.219	0.216	0.502	0.0683
		(0.205)	(0.238)	(0.211)	(0.565)	(0.268)
BGI*Excluded					0.410†	
					(0.233)	
WGI*Excluded					-0.573	
					(1.358)	
BGI*WGI*Excluded					-1.230†	
					(0.728)	
GDP pc (logged)		0.055	-0.381	0.073	0.055	0.0465
		(0.171)	(0.344)	(0.170)	(0.178)	(0.225)
Polity		0.015	0.012	0.015	0.012	0.0222
		(0.009)	(0.013)	(0.009)	(0.010)	(0.014)
Polity sq.		0.002	0.001	0.002	0.002	0.001
		(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Ethnic frac.		0.003		0.003	0.003	0.005
		(0.004)		(0.004)	(0.004)	(0.007)
Military regime		0.154	-0.073	0.137	0.140	-0.358*
		(0.112)	(0.189)	(0.113)	(0.112)	(0.178)
Power sharing		0.167	0.027	0.121	0.143	0.131
		(0.172)	(0.224)	(0.176)	(0.183)	(0.291)
Instability		0.200	0.086	0.213	0.207	0.181
		(0.165)	(0.173)	(0.165)	(0.168)	(0.193)
Trade openness		-0.002	-0.005	-0.002	-0.002	-0.005
		(0.003)	(0.004)	(0.003)	(0.004)	(0.005)
Former British col.		-0.012		0.003	-0.004	-0.062
		(0.147)		(0.148)	(0.151)	(0.229)
Military expenditure pc		0.003	0.005	-0.008†	-0.009†	-0.018†
		(0.003)	(0.004)	(0.004)	(0.005)	(0.010)
Military personal pc		-0.008†	0.0150†	0.003	0.003	0.007
		(0.005)	(0.008)	(0.003)	(0.003)	(0.005)
Cold war		0.136	0.0814	0.142	0.144	0.238
		(0.215)	(0.251)	(0.213)	(0.215)	(0.414)
Year		0.003	-0.006	0.001	0.003	-0.004
		(0.008)	(0.009)	(0.008)	(0.008)	(0.009)
Time last coup		-0.107*	-0.086†	-0.107*	-0.110*	-0.024
		(0.046)	(0.048)	(0.047)	(0.046)	(0.063)
Spline1		-0.001	-0.001	-0.001	-0.001	0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Spline2		0.001	0.001	0.003	0.001	-0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Spline3		2.94e-05	-2.02e-06	3.21e-05	1.09e-05	0.001†
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Country FEs	N	N	Y	N	N	N
# Countries	32	32	22	32	32	32
# Ethnic groups	142	141	105	141	141	141
N	4,673	4,352	3,184	4,352	4,352	4,352
Log-Lik.	-419.125	-363.645	-329.653	-361.598	-362.026	-205.442

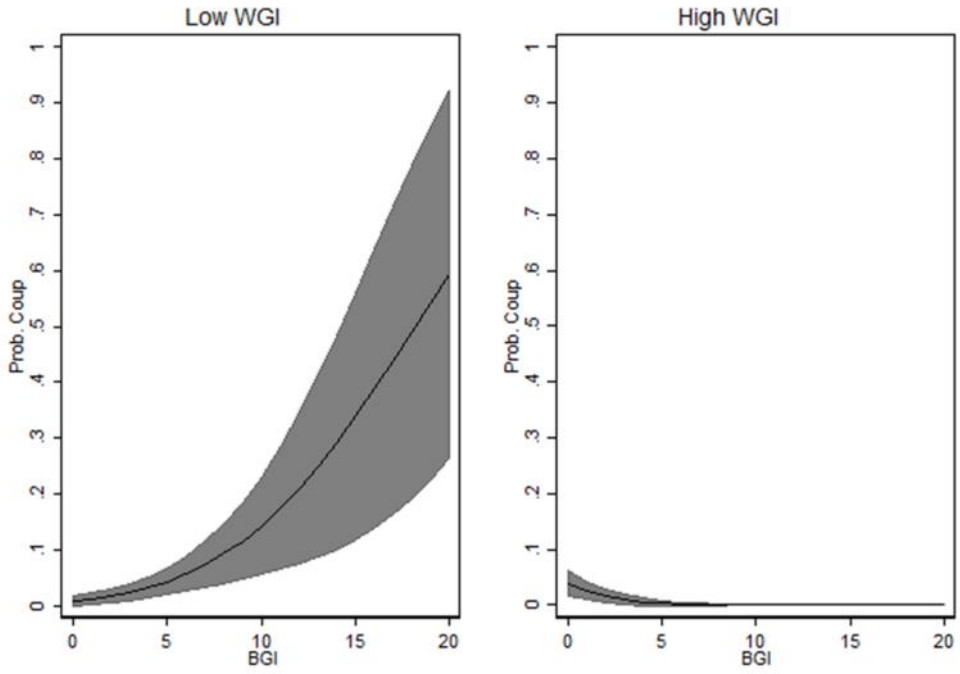
Note: Robust standard errors clustered on country in parentheses. All explanatory variables are lagged. **p<0.01, *p<0.05, †p<0.1.

Figure 1: Marginal Effect of BGI on Coups across WGI Levels



Note: Dashed lines are 95 percent confidence intervals. Based on estimates from Model 2 of Table 1.

Figure 2: Effect of BGI on the Predicted Probability of a Coup



Note: Shaded area represents 95 percent confidence intervals. Based on estimates from Model 2 of Table 1.