

David Rim

Professor C Weiss

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Are Genocides Rational?

Since the end of the Cold War, there has been increasing academic interest in the nature of intra-state wars. This is not surprising given that the majority of wars in this period have been intrastate conflicts. The burgeoning literature on the onset of these conflicts finds correlations between strength of the state, low levels of growth, the composition of ethnic groups and intrastate conflict. One of the causal pathways from these variables is based on game-theoretical analyses of the interaction between insurgent groups and states. However, while much of this literature has focused on minority groups' decision making, not as much study has undertaken states' strategies. The logic of this theory, which is based on interaction, should also explain such state reactions as genocide, ethnic cleansing and forced migration as part of a rational decision making process primarily motivated by economic incentives. In fact, empirical analysis indicates that, once controlling for civil war onset in order to avoid bias, the same covariates used to explain irredentist and seditious behavior by minority groups within states also explain genocide. That is, the likelihood of onset of genocide and ethnic wars are correlated with the same factors, suggesting strongly that the mechanism behind civil wars and ethnic wars is the same.

Background

There are a number of theories in the literature which deal with genocide and ethnic conflict. The tendency has been to either treat these as two separate phenomena, whereby one is often seen as a consequence of the other or to simply treat genocide as a subset of ethnic violence with no special meaning outside of this context. However, war between ethnic groups or civil wars of identity does not always lead to genocide. In fact, genocide as a phenomenon is rare. On the other hand, civil war does not always follow when a group is faced with violent repression. However, given the sometimes fine line between the two forms of ethnic violence, it is not always clear how or when to separate classes of violence. For example, the Nigerian Civil War led to the starvation and deaths of the primarily Igbo people of Biafra, leading several observers to describe the events as a genocide. However, this has been disputed by some researchers, since it is unclear as to whether the deaths were a result of the war or a policy of mass starvation (Destexhe 1994).

On the other hand, several quantitative studies have investigated the onset and severity of ethnic conflict which do not make special distinctions between genocide and other kinds of violence. Ted Gurr's *Minorities at Risk Project* finds several important determinants of ethnic group conflict. While prior group mobilization was the single most significant determinant of ethnic group conflict, he finds that grievances are the critical determinant of this mobilization (Gurr, "Why Minorities Rebel" 189). Thus, grievances, or the extent to which ethnic groups are disadvantaged or marginalized relative to other groups in the state, lead to political mobilization, which then in turn leads to conflict. In this view, economic conditions such as poverty and political conditions such as discriminatory treatment are significant only in that they exacerbate the grievances of the disadvantaged groups (189).

This grievance theory is based on the idea of political mobilization. Collective action, in the form of rebellion here, is seen as a process dependent on organization and subsequent mobilization, both of which depend on grievance and opportunity. In that sense, rebellions and civil war should be easily predicted through protest and violent demonstrations on the part of aggrieved groups who have faced repression or discriminatory practices. However, conflict does not always follow such a direct relationship with repressive practices. In fact, mobilization and even conflict often predates repression. Moreover, while it is clear as to what incentives disadvantaged groups may have to mobilize, it is not as apparent as to what incentives states or advantaged groups may have to violently repress their neighbors. By aggregating genocidal events within these datasets the power to understand the motivation behind these strategies are lost.

Other theories have argued that organization should be seen as predated by a process in which ethnic identity itself is constructed in the context of modernization (Brubaker and Cooper 44). Steven Majstorovic argues in his analysis of the conflict in the former Yugoslavia that while ancient rivalries were indeed present, elites within the ethnic subgroups manipulated the concepts of identities in order to gain or retain power (Majstorovic 170). Indeed the reason behind why certain groups seem hostile to each other is often the result of both elite manipulation and ancient antagonisms (Hale 463). In this view, ethnicity itself is not the reason behind conflict, but instead, is simply an excuse by elites to gain power, using ancient hatred as a rationale behind mobilization of their constituencies.

In testing these theories, Paul Collier and Anke Hoeffler develop an econometric model which accounts for both grievance and greed. In an abstract sense, this is still based primarily on the idea of political mobilization, since political movements require both motive and opportunity.

Marginalization and repressive practices, then may have a mixed effect since they are intended to reduce opportunities for mobilization. Using a new dataset of wars between 1960-1999, Collier and Hoeffler find that variables relating to grievance, such as ethnic fractionalization, polarization, ethnic dominance, and income inequality actually have quite little explanatory power. Instead, variables which indicate the opportunities for conflict, natural resource extraction, donations from diasporas and the intervention of hostile governments to be more useful predictors of violence (Collier and Hoeffler 15). This puts forward a strong argument for an economic interpretation of conflict, namely that ethnic conflict is primarily a greed-motivated endeavor.

James Fearon's model based on information asymmetries then, should not be seen as a departure from this literature, but rather an alternative theory of the mechanism explaining the empirical findings discussed above for why ethnic groups choose to fight. Like Collier and Hoeffler, Fearon's model is explicitly economic, yet dissimilar in that it includes an attempt to take into account the interaction between the state and the minority group. While their work indicates that insurgency is primarily motivated by economic consequences, it does not provide a theoretical framework with which to analyze behavior. In the simplest sense, an ethnic group chooses to rebel if the expected benefit of rebellion supercedes the state's cost of counter-insurgency (Fearon, "Weak States, Rough Terrain and Large Scale Ethnic Violence Since 1945" 22). What the model indicates is that an equilibrium exists in which the state's cost is based on the number of expected rebels. The number of expected rebels, then is based precisely on this cost, as a certain number of potential insurgents should choose to fight based on an analysis of opportunity cost (26).

Fearon also points to a further puzzle. Based on this analysis of costs, it should be possible to reach a negotiated agreement between sides which is collectively better for both sides.

Through de-escalation, each group may reduce costs while simultaneously increasing benefits. Fearon asserts that this can be partially answered through the problem inherent in transferring information. Part of the state's cost in counter insurgency is to discover as precisely as possible what the expected number of rebels should be (43). Meanwhile, negotiators for the insurgents have incentives to increase the size of their constituency in order to maximize transfers (43). In short, in an interaction that allows transfers to reduce conflict, there are incentives to distort information at the same time that the state cannot commit to using information it may gain through negotiation to reduce cost and continue counter-insurgency at the expense of potential insurgents.

While Fearon's analysis seems intuitive and provides a theoretical framework for the findings of previous studies including those of Collier and Hoeffler, there are some problems with this rational choice view of ethnic violence. First, as some research has shown, there are important differences between ethnic and non-ethnic civil wars. (Sambanis, 2001). Whereas Collier and Hoeffler and Fearon make no distinction between the two in their quantitative analyses, subsequent research has shown that by disaggregating the two types of war, insignificant correlates can become significant. Nicholas Sambanis argues that ethnic heterogeneity and polarization are explanatory in cases of identity wars, while they are not in civil wars (280). Disaggregation is also important if we are to understand state strategies. In fact, most of the previous literature has focused on rebel ethnic groups decision making processes. In many of the theories presented, it is not clear as to why states with large ethnic groups engage in repression and marginalization in the first place. One important puzzle is that some states do not engage in the severest forms of discrimination and repression of minority ethnic groups despite low opportunity costs and despite conditions of economic distress. Theories of ethnic conflict based

on grievance, political mobilization and rational choice seem much less able to address this kind of question.

Clearly the most brutal and indiscriminate activity on the part of the state are genocidal policies. They appear in Fearon's dataset and in many others, but there is no attempt to discuss or explain these actions separately. There does not seem to be any justification for treating genocides as identical phenomena. In fact, while ethnic violence in general may be economically motivated, there exists a literature of theories of genocide which are not based on this premise.

The first major quantitative analysis of genocide was Rudolph Rummel's project investigating democide – defined by Rummel as 'murder by government' (Rummel 36). In this analysis, genocide is a particular type of democide, one which involves murder on the basis of ethnic or religious identity. The findings from Rummel's dataset of politicides, defined as incidents of politically motivated civilian deaths which exceeded 1,000,000 dead, points to regime type as the primary risk factor (2). Compared to democratic regimes, authoritarian and totalitarian regimes commit far greater numbers of democides, such that the lowest figures for authoritarian regimes corresponds to the highest for those of democratic states (8). In short, the main risk factors for democide are summed up neatly in the phrase "power kills, absolute power kills absolutely (8)." The implications are obvious, namely to foster democratic transitions wherever possible. However, Rummel's arguments are flawed in two ways. First, regime type is a loosely operationalized concept in this study. Clearly, there are varying flavors of democracy and regime type is often a poor indication of state power. Rummel's main argument is that as power is concentrated in a smaller number of elites, politicide becomes more available as a strategy. Secondly, democide is a broad concept that includes murder for political purposes and indiscriminant killing as well. As an example, Rummel includes the millions of Chinese killed in

the Cultural Revolution and Stalinist purges as cases of democide. While he argues that the dynamics of conflict work in similar ways regardless of the type of democide, there is clearly a world of difference between these types of crimes.

Realizing some of these shortcomings, further research has attempted to more carefully examine the situations around which genocides occur. Somewhat along Rummel's line of thought has been an inquiry into political opportunities. From a comparative perspective, Barbara Harff argues that genocide follows from upheavals within the state, often following from a coup or following communal or external conflict. (Harff 183). Resulting quantitative research has shown that a state that is undergoing a transition or a weakening in power relative to its neighbors may promote political mobilization (Krain 355). In fact, these theories are strengthened by the empirical finding that prior or ongoing conflict is indeed the strongest predictor of genocide (353). In contrast to Rummel's line of reasoning, democratic transition may not be the best course of action since it requires a drastic structural adjustment of the state. Ted Gurr argues that the main danger of state upheavals is opportunity for the rise of nationalism or ultra-nationalism (Gurr, "Peoples against States" 361). In short, this is a reinterpretation of theories of mobilization. Ethnic groups mobilize to take part in the new opportunities available and nationalism provides a means to mobilize constituents. This also neatly ties in the arguments focusing on elite manipulation, since elites effectively create myths of ethnicity in order to foster nationalist mobilization.

However, the main problem with these analyses of genocide lies in the problem of proposing mechanisms. While upheaval may lead to the conditions surrounding conflict and genocide, it is not clear why some states or elites within these states choose genocide over repression or conflict over appeasement, or if they indeed choose at all. Moreover, if all conflict

causes upheaval, why are some conflicts characterized by genocidal policies and not others?

Theoretical Model

Fearon and Laitin's model seems to provide an answer to these questions. At the heart of their model for insurgency is a simpler model of interaction – a simultaneous move game played by the state and members of a group within the state. The government chooses a level of spending on counter insurgency, c , while at the same time each of the n members of the group chooses whether to accept a reservation payoff, r_i , or to rebel and receive an alternative payoff. In this model, the reservation payoffs are distributed according to some probability distribution function f , which is known to the government (25). If the member chooses to rebel, he gets an expected payoff distributed according to some function $b(c, \alpha)$ which is dependent on the level of government spending and a parameter α . The function is increasing in α and decreasing in c , such that an increase in counter insurgent spending reduces the expected benefit, while an increase in α increases it. An increase in α then should then be interpreted as any condition which either negatively impacts the effectiveness of c or increases the expected benefit of rebellion. α then comprises a wide range of factors, including an increase in the groups military effectiveness, financial support from a diaspora or neighboring ethnic enclave or simply increasing the difficulty in prosecuting a counterinsurgent campaign (25). Meanwhile the payoffs for the government in this model are dependent on the number of those which choose to fight. Assuming the game is zero-sum, with a total of T , if m is the number of rebels (those who choose to fight), then the payoff to the government is $T - \sum_{i=1}^{n-m} r_i - \beta mb(c, \alpha) - c$, where β is some parameter which we can assume to be greater than 0 (26). Clearly the payoff to the government is

decreasing in m , since $b(c, a)$ is always greater than r_i for all m members. Therefore, the payoff is also decreasing in α more specifically.

The game has an unique Bayes-Nash equilibrium. The government will choose a level of spending c^* that maximizes the government's payoff given the expected number of rebels the current distribution function f , and those members of the group for whom $b_i(c^*)$, α is greater than r_i will fight (28). In a sense, this is a model for continuing internecine warfare, since the game suggests that in certain games there will always be a certain number greater than zero for whom the alternative to fighting is either too low or the benefit from fighting is too great at equilibrium. This model can be interpreted as a model of bargaining, through the level of counter-insurgent spending. By lowering c , there is an increase in the expected benefit to fighting, but this is offset by an increase in r_i . In other words, a well-off faction has no incentive to fight, and therefore the state has no reason to choose a high level of counter-insurgent spending. In this way the model indicates that the variables of interest are r_i , α and n . Insurgency, then, interpreted as a magnitude based primarily on m , should occur when α is high and the reservation payoffs are low.

While Fearon and Laitin are primarily concerned with members of the group, the model is one of interaction. According to the model, counter insurgent spending can be interpreted as any cost incurred as of this interaction, the equilibrium can be found at a point where the number of rebels m is high or α is high. Even if these are low enough to preclude outright insurgency, if genocidal campaigns are interpreted as an extreme counter-insurgent effort, then the model of insurgency should also explain genocides. If it is assumed that decision makers are rational and primarily motivated by these economic conditions, then genocide can also be interpreted as a preventative war against a insurgent group.

Hypotheses

If the above model does hold, then onset of genocides and onsets of insurgencies should occur simultaneously or at least very close together in time. This follows directly from equilibrium, as an extreme reaction of the state should coincide with a high level of insurgent activity. The amount spent on counter-insurgency is high, this reflects a high m , the number of expected rebels. Both the state and the members of the group are reacting to the same calculus of payoff structure. Insurgency and genocides have the same basic mechanism and should have the same relevant covariates relative to the model above. However, since there are genocides that do not occur simultaneously with insurgencies, then the covariates which explain genocides in this model should also be explanatory even after accounting for the probability of insurgency. Fearon and Laitin estimate an empirical model of insurgency based on the hypothesized theoretical model. This study follows along the hypotheses presented there as well as testing the proposed empirical and theoretical models discussed above as it relates to genocides.

The hypotheses can be divided into three main considerations, based on the three parameters of the payoff structure. The first of these to be examined is the α parameter discussed above. To restate, within the model α can be conceived as any factor that makes fighting preferable to the reservation payoff. This includes a detrimental effect on the efficacy of counter insurgency. Fearon and Laitin point out that terrain is one such factor (p 38). Features such as the presence of jungles or heavily forested regions or mountainous territory should simultaneously increase the effectiveness of covert insurgent operations while decreasing the ability to combat them. Through its effect on the α parameter, terrain should play an important part in both genocides and insurgencies.

There are also many non-fixed effects which should decrease the ability of the state to execute effective forms of counter insurgency. One of these is organizational in nature. The state may simply not have the organizational or administrative capability to carry out these functions. A sudden fall in state power, therefore, should increase the number of the opposition group willing to fight and increase the likelihood of a civil war. With regard to genocide, this position is less clear since there may be a point of weakness in which the state is actually unable to spend any amount in counter insurgency. That is, it is simply incapable of a genocide according to definition above. However, the increase in the number of rebels expected to fight should increase the level of government response, regardless of whether the state is capable of actually carrying out a genocide. Thus, state weakness should be an important predictor of genocides, although perhaps not nearly as important as may be thought.

However, α also takes into account any benefits that may be reaped by potential insurgents through fighting. It is important to note that this also includes any immediate or future expected payoffs. In a model of insurgency, this includes any potential gains from autonomy or acquiring state power. Exploitation of natural resources is one such gain, effectively “raising the value of the ‘prize’ of controlling state power (81)” The presence of such natural resources effectively increases α . While it may be difficult to accept that the individual potential rebel is aware of these gains, it is not as difficult to recognize that the state is aware of its own advantages and will attempt to protect its assets. As such, while the increase in expected benefit for the individual member of the group is small, a heavy reliance on resources should compel the state to exert more effort on counter insurgency. Other state assets which are not as imminently “lootable” should not effect the equilibrium as much. Therefore a state that is dependent on natural resources rather than on industry or trade should be both more likely to experience an insurgency as well as to

engage in campaigns of genocide.

As for the other parameters of interest, a decreasing reservation payoff, r_i , should also have an effect on the probability of genocides. Clearly, even if α is high, there is little incentive for the majority of the members of the opposition to desire to fight if the reservation payoff is higher. Simply put, a well off opposition group should have no reason to fight and therefore the government should spend little or nothing on counter insurgency. On the other hand, if the opportunity cost is slow, governments will be forced to spend an increasing amount on counter insurgency in order to keep the number of actual fighters, m , down even in the face of effective campaigns. Therefore, the existence of alternative economic opportunities for the opposition, as well as the overall health of the economy should be highly correlated with genocide onsets.

Meanwhile, this number, m , while clearly a random variable, is nevertheless dependent on n . If genocide and insurgencies are defined according to some order of magnitude, then these should not be dependent on the proportion of rebels but on absolute size. A low total number of opposition group members would therefore reduce the total cost to the government, and therefore reduce spending on counter insurgency. This, of course, is completely intuitive, since governments are unlikely to spend much on counter insurgency in an absolute sense when faced with minimal threat. Accordingly, a large opposition population should increase the threat to the government, thereby increasing the likelihood of both genocides and insurgencies. However, such direct measures are difficult to obtain, especially in cases where genocides have occurred. Nevertheless, since there should be a large positive correlation between the size of the opposition group and the size of the states total population, there should be significant correlation between this measure and the likelihood of genocide.

Additionally, there are several factors which some studies have presented which should

not have explanatory power given the model of genocide. One such characteristic which has been proposed as an important covariate is polity. It may be argued that democracies provide members of opposition access to political power which should be considered a portion of the reservation payoff – which includes all benefits, not only economic in nature. However, while it is difficult to quantify the utility of democracy, these should be relatively subordinate to economic concerns. Therefore, given the effects of other relevant factors on α , r and m , polity type should have little or no effect on genocide. While a larger proportion of autocracies may indeed engage in genocides than the norm, most of this relationship should be explained by other variables of interest.

Another feature which other studies have argued effect the likelihood of genocide is the ethnic character of the regime, that is whether the regime reflects a salient minority or majority group. Again here, it may be argued that a salient minority group should be faced with an increased level of threat. However, firstly, the model suggests that regimes will act according to its own interests and not those of a minority group it may represent. Secondly, even if these were to be identical, this should still make little difference, as the absolute size of the opposition is the more important factor. As governments and members of this opposition play the game described above, the government will play a strategy minimizing a level of spending relative to an absolute number of potential insurgents. Thus, given the total population of the opposition group, a regime consisting of a salient minority should not be at greater risk of engaging in genocides relative to those consisting of salient majorities. That is, if the number of potential insurgents is great, both will spend a large amount on repression, which when taken to an extreme, may produce a genocide.

For similar reasons, a state led by a regime which advocates an exclusionary ideologies should also not be at higher risk of genocide. To clarify, other studies have indicated that regimes

with exclusionary ideologies, that is, those predicated on membership in a given ethnicity, religion or political philosophy, are more likely to engage in genocides. Indeed, this line of reasoning is both plausible and intuitive. The model, however, leads to no such conclusions. Instead, the theory suggests that the mechanism behind genocides is simply a rational analysis of costs and benefits. It may be that such ideologies are endogenous, as these ideologies are used to explain behavior, which, despite having rational causes, is anathema. Nevertheless, any state with a high number of potential rebels should be at a higher risk of genocide regardless of regime ideology.

Operationalizing Genocide

However, testing these hypotheses may be problematic due to measurement concerns, even with respect to the dependent variable here, occurrence of genocide. Genocide and ethnic conflict studies tend to have operationalization issues because of the politicization of many definitions. Terms such as “genocide,” “war” and even “ethnicity” have legal ramifications in political use. The United Nations Convention on Genocide, drafted as a response to the Holocaust, defines genocide as “intent to destroy, in whole or in part, a national, ethnical, racial or religious group. . .” and requires the parties to the convention to intervene (United Nations Convention on Genocide 207) Because of the legal consequences of the convention, states or groups since 1948 have had reason to avoid actions which would fall under the definition set forth therein. Indeed, using a strict interpretation, it is possible to argue that only three genocides have occurred to date, the Jewish Holocaust and Armenian and Rwandan genocides (Destexhe 4). Nevertheless, even in the latter two cases, some have argued that atrocities committed were not the result of premeditated intent, but were the consequences of war, famine or disease.

In contrast, the definition used by Gurr, Harff and Krain in their quantitative studies seems closer to the concept of ‘war on identity groups’ and is more useful for research purposes because of the rarity of these events. In this operational definition, there are four main criteria. First, the state must be complicit in the prosecution of the genocide or politicide. This is central in investigating the bargaining mechanism discussed above, since decision making must be primarily attributable to the state or lacking a well-defined state apparatus, a dominant ethnic group vying for control of the state.

Secondly, attacks must last at least six months. This criteria establishes that there is a willful and sustained attempt to destroy members of group, in accordance with the definition proposed above and the UN definition, rather than a mistake in coding or the act of one or more indiscriminant criminals. In conjunction with the first criterion, a sustained strategy indicates that a conscious decision has been reached rather than a random violent episode.

Furthermore, the attacks must involve non-combatants. Again, this is in concordance with the UN definition and provides a criteria with which to differentiate genocides with other forms of violence. The codebook warns that it is often difficult to ascertain the status of civilians in low level conflicts. However, this does not pose a major theoretical obstacle within the context of the mechanism under study. If the decision-making around genocide is a rational reaction to primarily a problem of ascertaining combatant status, then we may also include any cases (taken with the above mentioned criteria) in which this status is unclear. Therefore, it is not necessarily a problem in this study if cases in which some combatants were targeted but resulted in a large number of non-combatant deaths due to a policy of carelessness.

Lastly, the fourth criterion is more precisely a non-criterion, in that cases are coded as genocides without respect to magnitude. That is, the number of fatalities does not effect the

classification. This is reasonable in some cases considering both the UN definition and the fact that genocide is a crime of intent. Since the dataset is comprised of observations in country years, this may lead to cases in which most fatalities occurred in a single year, with episodes which took place in preceding or subsequent years. However, whether the group of years can be considered a single genocide is better decided by case history rather than quantitatively. In these cases, genocide onset variables are recoded if a body of historical record indicates that a new campaign was initiated rather than using the these guidelines.

[List of genocide years here]

It should be noted that this definition includes cases of democides and politicides which should not be strictly regarded as genocidal in nature, such as deaths occurring in China under the Peoples Republic of China, which were not primarily motivated by the attempt to target members of an ethnic or religious identity group. However, there is no theoretical need to restrict attention to cases in which the targeted group consisted of one or more ethnicities. Rather, the theory suggests that the interaction between the state and an opposition group leads to violent outcomes where payoffs are structured in a way such that violence is the rational choice. Genocides in the strictest sense is a subset of these outcomes, but restricting attention only to these is not necessary. In fact, the model should explain any violence in which the state is the primary actor against members within its dominion. To be more clear, if the model interaction between the state and an opposition groups explains violent outcomes, one such outcome is a genocide. In the cases of democides and politicides, while the basis on which to classify the victimized groups is less clear, there should be very little qualitative or quantitative difference.

As such, there is no theoretical problem in using the operational definition used by Gurr, Harff, et al. in genocide studies. While there is some room for disagreement within this

definition itself, there is clearly a rule-based system with which to identify cases and, moreover, stays close to the bounds of common understandings of genocides, democides and politicides.

Data And Methodology

The dataset used in this study was collected by combining replication data from Fearon and Laitin's 2003 study with variables of interest collected by the Political Instability Task Force (PITF). The Fearon sample includes all states with total populations of at least 500,000 in 1990, 161 states between the years 1945 to 1999. Since there are no cases involving states with populations of less than half a million which could be classified as genocides, the sampling restriction on population size should not result in bias, given the methodology outlined above. The Fearon sample comprises a total of 6,610 observations.

The Political Instability Task Force, Phase III dataset is intended for use within the context of case-control studies. States involved in either revolutionary wars, ethnic wars, adverse regime changes, and genocides or politicides are classified as "problem" cases and are included in the sample (Marshall, et al. 2001). Each case is matched with three randomly selected non-problem cases, states within the same region in the same year, as controls. This procedure attempts to remove bias caused by the relatively rare incidence of problem events, while simultaneously reducing the need to capture variables for all countries – a costly and time-consuming task. The PITF dataset includes all problem cases and controls between 1955 and 1999, a total of 8775 observations.

After combining the two datasets, the final dataset includes 5710 country year observations. The dropped observations are due to the fact that in order to combine these two

datasets, observations which occurred prior to 1955 and after 1999 were not available in both datasets. Further study would include obtaining data for time periods before and after 1955-1999 in order to increase generalizability. However, since the Fearon and Laitin data included all observations between 1955 and 1999, it is unnecessary to use this case-control methodology used in PITF studies and in Harff's 2003 study. Rather, bias in estimating the log-odds using logit analysis can be removed using the procedure outlined in King and Zengche 2003.

The presence of bias resulting from logit analysis of rare events is not taken into account in most logit analyses of genocide. Since most forms of conflict, genocides in particular, are exceptionally rare events, there is a danger of underestimating probabilities using logistic regression. In a logistic regression, the dependent dichotomous variable is transformed into a continuous logit variable, and maximum likelihood is used to estimate the parameters of the logistic distribution. However, the logit variable is not observable, and therefore the dichotomous variable is used to estimate the logit coefficients, since the odds of genocide must be estimated from the dichotomy of whether it actually occurred. The distribution of the more numerous non-genocides will be well estimated, but that of the genocides will be estimated using only a small number of observations. As the minimum of the sample is almost always greater than that of the population, this distribution will tend to underestimate the effects of the independent variables (King and Zengche, "Logistic Regression in Rare Events Data." 704). Thus, if the probability of positive events is low, then maximum likelihood will tend to underestimate the magnitude of logit coefficients.

In order to correct this bias, this study uses the procedure outlined in King and Zengche 2000, which also returns bias corrected relative risks rather than log probabilities of genocide. The bias primarily effects the estimated equation through its effect on the intercept. (704) Thus

the MLE estimate of coefficient

$$\hat{\beta} = \tilde{\beta} + \text{bias}\hat{\beta} \quad (1)$$

where $\tilde{\beta}$ is the bias corrected estimate. The bias itself, however, can be estimated using weighted least squares (147). King and Zengche also show that the variance of the corrected estimate is also less than that of the biased estimate (148). As such, bias correction in rare events data reducing variance in the estimates as well as producing more accurate estimates. Since genocides are extremely rare events, King and Zengche's rare events logit procedure is used in this study instead of the more straightforward logistic regression.

One caveat with rare events logit is that since it is not a likelihood technique, a likelihood ratio test is not possible. Therefore, while the estimated coefficients are unbiased using the rare events logit procedure, goodness of fit statistics will not be reported unless directly comparing models using logit analysis. Moreover, since the probability of a genocide is less important than whether or not one will actually occur, a classification test is more appropriate in to test goodness of fit than comparison of likelihood estimates. These will be reported as well as information criteria.

Summary of Findings

The empirical results do indicate that there is some evidence that the Fearon and Laitin (FL) model does extend to genocides. Most of the hypotheses discussed in the previous sections find evidence to suggest that the theoretical model is a mechanism behind the onset of genocides. The analyses presented below suggest that the majority of the original variables included in the FL model do hold explanatory power in the context of genocides. However, there are also strong

indications that further theoretical and empirical work is necessary.

The Fearon and Laitin study on insurgency presents several empirical models, differing mainly in the dependent variable. This is primarily to investigate theory in the face of difficulties stemming from operational definitions of insurgency, civil war and ethnic wars. In all models, the dependent variable is regressed on four continuous variables: GDP, population, percentage of state that is mountainous, polity score and ethnic fractionalization. GDP and population variables are both lagged, using the previous country-year's record, while the population, polity score and % of state mountainous are both logged. To these five are added five dichotomous variables: whether the state is contiguous, a new state, receives more than a third of its export revenues from fuel, whether the previous country-year was coded as a war year, whether the previous country-year was coded as unstable. Replication of their analyses on ethnic wars yields no significant differences on the merged data set. Inclusion of all country years in the Fearon and Laitin study results in the identical logit estimates.

In order to regress genocide onset on these variables requires the inclusion of an additional dichotomous variable, insurgency, in order to prevent bias. If onset of insurgency is strongly correlated with the variables used in estimating an empirical model of insurgency, as is shown in the Fearon and Laitin study, then excluding this variable will be estimating the effects of this correlation rather than establishing a *ceteris paribus* correlation with genocide onset. Moreover, since there is significant correlation between genocide onset and civil war ($p < .000$), civil war onset must also be included in the estimation. However, the correlation is not high (.2654) and therefore there is no subsequent cause for concern regarding collinearity.

The results from the rare logit procedures are shown in Table 1. There is considerable

Table 1: The FL Models

	Civil War Coef./se	Ethnic War Coef./se	Civil War Coef./se	With Empires Coef./se	COW Civil War Coef./se
War Onset	3.505*** (.445)	3.539*** (.466)	3.481*** (.459)	3.502*** (.443)	3.689*** (.419)
War Previous Year	.017 (.639)	-.298 (.745)	.025 (.635)	-.035 (.643)	-.432 (1.106)
Per Capita GDP	-.215 (.178)	-.163 (.152)	-.243 (.180)	-.235 (.156)	-.238 (.172)
Population	.209 (.110)	.331*** (.095)	.216* (.108)	.221* (.111)	.243* (.117)
Mountainous Terrain	.353* (.156)	.382* (.165)	.350* (.154)	.362* (.154)	.311 (.169)
Non-Contiguous	-.403 (.653)	-.322 (.745)	-.524 (.669)	-.540 (.638)	-.337 (.564)
Oil	1.075* (.499)	1.122* (.497)	1.171* (.485)	1.135** (.420)	1.098* (.446)
New State	1.615* (.654)	1.932** (.674)	1.541* (.642)	1.647* (.651)	1.609** (.580)
Instability	-1.606 (1.058)	-1.436 (1.052)	-1.727 (1.049)	-1.597 (1.039)	-2.321 (1.418)
Polity	-.003 (.040)	-.015 (.044)			
Ethnic Fractionalization	-.116 (.742)	-.942 (.834)	-.130 (.749)	-.120 (.734)	.082 (.743)
Religious Fractionalization	.302 (.894)	.637 (.927)	.337 (.901)		.001 (.944)
Anocracy			.294 (.498)		.487 (.470)
Democracy			.299 (.694)		.418 (.687)
Constant	-7.940*** (1.290)	-8.865*** (1.327)	-8.046*** (1.224)	-7.964*** (1.189)	-8.133*** (1.285)
No. of cases	5544	4570	5544	5569	4730

Source: final_data.dta

* p<0.05, ** p<0.01, *** p<0.001

agreement between these estimates and those found using insurgency as the dependent variable. An immediate conclusion is that the single greatest covariate of genocide is the onset of a civil war, which is associated with over 3000% increase in the probability of genocide, other variables at mean levels ¹. While there is certainly a possibility of observer bias, since classifications of conflict are lacking in strict distinctions, there are two plausible mechanisms under the theory presented above. First, if insurgency is symptomatic of a bargaining failure, then the covariates which should explain genocide are already present. If both state and insurgent group are reacting to the same mechanism, then it is not surprising that insurgency should coincide with genocide.

Secondly, insurgency dramatically increases the cost of repression and increases the number of potential insurgents. The cost of fighting a civil war is already much higher than counter-insurgency alone. As the costs increase, the need to provide benefits for the repressed group decreases at the same time that the number of insurgents, potential or otherwise, increases. Furthermore, depending on the ability of the insurgency to diminish state capacity, the overall utility of less violent forms of repression is likely to be reduced as well. Thus, genocide can be seen as a response to a situation in which the costs of repression are already at its peak while the number of insurgents has dramatically risen.

There is, however, the possibility that the mechanism is not a factor at all. There are other plausible explanations for the significance and magnitude of the effect of war onset. It may be argued that war or some forms of war causes genocides, or vice versa, as some studies have suggested (Krain 1999). Endogeneity may also be a factor as it may be argued that states

¹ Estimates produced using relogitq procedure as described in King, Zengche 2001 with all other right hand values at their respective medians. Note that relogitq uses Monte Carlo simulation, such that estimates may differ from run to run.

self-select into more violence-prone groups. A more detailed analysis of these possibilities are presented in the following sections. However, the more troubling account is that whereby an alternative mechanism is at play which is not yet observable.

Turning to the other covariates in the models, of the remaining twelve variables, only mountainous terrain, oil exporting and new statehood are consistently significant, and only at the 95% level of confidence. Lag of population size is significant in four of the models presented in Table 1. This is compared to the seven covariates which are highly significant (99% or greater) across all five models when using insurgency as the dependent variable².

Population

As noted, the size of a state's population is not significant at the .05 level in model 1, which controls for onset of civil war. However, it is significant at that level in the other four models, which control for ethnic war, civil war with colonial wars included, and civil war onset as defined by the Correlates of War dataset. Given that the p-value of the logit coefficient in model 1 is very close to significance³ and that the direction and magnitude is very similar in all five models does suggest that population size interacts in some way with genocides. In all models the sign is positive, and the effect-size not negligible. The increase in relative risk between the median and 95th percentile largest countries (7,990 and 107,188 in thousands) in model 1 is roughly 174%.⁴

Larger populations should simultaneously increase the number of potential insurgents at a

² It may be argued that this is the result of using the rare logit correction which may increase error variance due to uncertainty in the strength of bias. However, logit estimation does not change significance except in the case of the instability measure which is .046 under logit with robust standard errors and .126 using rare logit correction.

³ P-value = .057

⁴ 240%, 175%, 180%, 188% respectively

given income level while simultaneously lowering the per capita benefit, thereby increasing the likelihood of bargaining failure. However, extremely heterogeneous populations should decrease the number of potential insurgents in any one grouping, lowering the propensity towards violence toward or on the part of any one group. This is controlled for in the ethnic and religious fractionalization measures, and therefore the presence of a large population does seem to hold explanatory power, as there is a significant correlation. One interesting puzzle, however, is that neither the absolute size of the second largest group nor its percentage share of the total population is significantly correlated with the onset of genocide, given the total population. It may be that finer measurements within the dyad between the groups are needed.

The role of population size has not been central in the literature on structural models of genocide. There are plausible arguments that genocides may affect population sizes, since groups facing extreme duress migrate to neighboring states. The patterns of migration may also result in less reliable estimates of population sizes. Therefore the figure of the previous country year is used in data analysis. Nevertheless, it is important to consider these caveats further. Population size estimates may be less reliable in cases where genocide has occurred or is occurring, leading to heteroskedasticity. In this case, heteroskedasticity robust standard errors are reported.

Mountainous Terrain

The terrain variable here is as close to an instrument for the theoretical model as is possible. Plausible explanations for its effect other than through the mechanism in question include regional effects and other spurious factors which include effects on the economy and ability to govern effectively. However, even with controls for GDP, polity and stability measures, mountainous terrain is still significant in all five models. After including the region fixed effect to

all five models, the variable is still significant. The increase in relative risk about 195.2% in model 1 from the median percentage mountainous (10.4%) to the 95th percentile (67.357%)⁵.

The inclusion of variables measuring or proxying the relative difficulty of ascertaining the number of potential insurgents is crucial. The FL model implies that when the more problematic this information becomes to obtain, the more dangerous the situation becomes. In this case, this should also make a genocide more likely to occur. While state weakness factors into this dynamic, there must also be fixed effects which make calculations more complicated or even impossible. Terrain is one such factor. Fearon and Laitin argue in their analysis of insurgency that mountainous or jungle terrain should increase the odds of an insurgency. Their empirical analysis indicates that this is true. Given other factors, they find that the percentage of mountainous terrain is in fact persistently correlated with higher probability of insurgency.

Indeed, even after controlling for civil war onset and GDP, instability and polity measures, there remains a significant correlation between the state's percentage of terrain that is mountainous and the onset of genocide. A test that this correlation is due to regional fixed effects indicates that this is not the case. As shown in Table 2, the region variable is not significant and has no appreciable effect on the direction or magnitude of the logit coefficient. Including a dichotomous variable coded as 1 if the state is located in Sub-Saharan Africa has no effect as well.

Oil

Several studies have discussed the pertinence of natural resources in determining conflict (Sambanis 2003, Collier-Hoeffler 2005) As mentioned previously, however, the mechanism is unclear. While a strong relationship between commodity exports such as petroleum or diamond

⁵ 203.3%, 187%, 194.7, 178%

Table 2: FL Model with Region

	Civil War Coef./se	Ethnic War Coef./se	Civil War Coef./se	With Empires Coef./se	COW Civil War Coef./se
War Onset	3.511*** (.436)	3.539*** (.472)	3.494*** (.450)	3.531*** (.442)	3.710*** (.471)
War Previous Year	-.053 (.668)	-.317 (.770)	-.031 (.659)	-.082 (.676)	-.478 (1.120)
Per Capita GDP	-.169 (.188)	-.118 (.170)	-.194 (.193)	-.194 (.163)	-.188 (.194)
Population	.289* (.116)	.375*** (.098)	.298** (.115)	.304** (.117)	.330** (.127)
Mountainous Terrain	.376* (.171)	.401* (.180)	.368* (.167)	.383* (.168)	.303 (.176)
Non-Contiguous	-.082 (.727)	-.068 (.831)	-.217 (.745)	-.177 (.691)	-.043 (.652)
Oil	.925 (.499)	.994 (.529)	1.015* (.490)	.987* (.434)	.913 (.470)
New State	1.764** (.678)	2.040** (.720)	1.678* (.665)	1.779** (.669)	1.783** (.588)
Instability	-1.689 (1.062)	-1.470 (1.056)	-1.825 (1.055)	-1.717 (1.046)	-2.326 (1.390)
Polity	-.008 (.039)	-.020 (.045)			
Ethnic Fractionalization	-.148 (.727)	-.819 (.846)	-.166 (.733)	-.135 (.718)	-.015 (.728)
Religious Fractionalization	.236 (.939)	.583 (.952)	.278 (.944)		-.036 (.987)
Region	.211 (.136)	.160 (.157)	.207 (.138)	.223 (.126)	.204 (.143)
anocl			.304 (.475)		.423 (.471)
deml			.182 (.724)		.259 (.747)
cowonset					3.710*** (.417)
cowwarl					-.478 (1.120)
Constant	-9.849*** (1.992)	-10.270*** (2.151)	-9.919*** (1.893)	-9.968*** (1.755)	-9.933*** (1.953)
No. of cases	5544	4570	5544	5569	4730

Source: final_data.dta

* p<0.05, ** p<0.01, *** p<0.001

exports has been shown to hold between civil wars, this relationship has not been examined with respect to genocide. Within the FL model, the presence of a lootable resource may increase incentives for potential insurgents with no effect on the effectiveness of counter-insurgency (FL working 28). However, since the game is a model of interaction, this dynamic may precipitate more repressive violence on the part of the state. In fact, since petroleum extraction is not an easily lootable resource, dependence on petroleum export should only minimally effect minority incentives, while simultaneously increasing incentives for the state as well its improving its ability to engage in counter-insurgency.

The analyses presented above suggest that this may be true in the case of genocides. Even after accounting for war onset, a state in which more than a third of whose export revenues are derived from fuels is associated with 286.9% increase in risk compared to one that does not, with other values at median levels.⁶ This increase in risk is much higher than that reported in relation to civil war, which accords with theory. Again, it could be argued that the oil variable also encodes other factors, such as the religious factors associated with the predominance of Islam in these regions or regional effects again. However, neither the inclusion of the percentage of population that is Muslim nor a dummy coded as 1 if the state is located in North Africa or the Middle East into the models changes the magnitude or significance of revenue from fuel export. Thus reliance on a fuel export for revenue does seem to be associated with an increased risk of genocide that due to region or the role of a specific religious culture.

⁶ 295.7%, 317.5%, 302.8, 300.7% increase in relative risk for models 2 through 5 respectively.

New States

New states should be relatively weak, as it takes time to consolidate power and to build up the administrative capability that is required to reach negotiated settlement. Therefore, a variable indicating whether an observation is of a state in one of its first two years of independence is included. Secondly, if a state has undergone a shift in political ideology, this is a sign of core instability. These kinds of political changes have similar challenges and consequences to those of a new state, as new laws and procedures take time to take hold.

The empirical results present somewhat of a puzzle. New states are much more likely to experience a genocide. In fact, a new state is more than 5 times more at risk of genocide than one that is not, other variables held at their means. However, the instability measure is not significant, given the other covariates which includes civil war itself. A reason for this may be the fact that the mechanism behind state weakness and genocide, however, is not clear. In the FL model of insurgency, the presence of a weak state should reduce the effectiveness of counter-insurgency while at the same time increasing its cost. The probability of insurgency then should be high. However, in the case of genocides, which can be seen as a more costly form of counter-insurgency, state weakness may lower the probability of a genocide. State weakness may actually hamper a state's ability to enable these kinds of policies even as it increases the likelihood of insurgency. This is consistent with the sign of the logit coefficient on the instability proxy, which is negative in this case, but positive when civil war is the dependent variable.

While this is plausible, the sign is not significant, and further research is necessary to fully understand the interaction between state weakness and genocide. Since the instability measure is a dichotomous variable in this data set this is difficult to accomplish using country year

observations. The argument above indicates a U-shaped relationship between state weakness and genocides. However, using polity differences in country years reveals that only two genocides began in states which saw a greater than two unit change in polity scale in the previous three observations. In fact, only two genocides occurred after any change in polity scale in the three previous years. The only conclusion remains that instability as defined by polity score changes does not seem to have any explanatory power.

GDP Per Capita

The size of an economy is an important structural element affecting many kinds of outcomes in international relations. In this case, GDP should serve as a proxy for the economic alternative to genocide. In other words, in a robust economy, there should be little in the way of economic incentives towards genocidal campaigns. One caveat is that GDP is not plausibly endogenous relative to genocide, as a campaign to wipe out an ethnic or political group is costly and may have far reaching and indirect consequences within a state's economy. Using a lagged GDP, recorded in the previous year, alleviates some of the concerns regarding endogeneity. This also makes sense theoretically, since the effect of GDP may not be felt by decision makers for some time. In the Fearon and Laitin study, low growth is indeed associated with a much higher risk of insurgency. They report a 41% reduction in relative risk with a \$1,000 increase in per capita GDP (11). Moreover, GDP is also shown to be a significant covariate in Krain and Sambanis.

Therefore it is puzzling to note that these models do not result in satisfactory empirical evidence that this is the case when genocide is the dependent variable, given the other variables. Although the sign is as expected, the logit coefficient is not statistically significant. Furthermore,

statistical corrections cannot be blamed, as logit estimation does not yield significant estimates.⁷

However, a preponderance of theory suggests that a misspecification error, possibly due to inclusion of an irrelevant variable or functional form. Moreover, the similarity of estimates when examining insurgency and genocides indicate that error variance may be an issue. In fact, replacing the GDP variable with a logged version does produce significant estimates under the RELOGIT procedure. Table 3 is shown below. This is due, partly, to a reduction in variance when using the logged form. It should be noted that logistic post-estimation indicates an improvement in the Bayes Information Criterion (BIC)⁸.

Secondly, the removal of variables, non-contiguous state, ethnic fractionalization, religious fractionalization, and the polity index from the model results in a more significant finding. A test of these variables using Wald tests of joint significance indicate that the hypothesis that each has no effect within the model cannot be rejected.⁹ The two logit models are shown below, with information criteria statistics and classification rates reported. This provides some evidence that the lack of significance is the result of irrelevant variables, as post estimation in the form of either BIC or the classification error rate shows no appreciable difference, despite the reduction of four covariates.

Grievances

Although the literature on grievance has lost much of its luster with regard to studies of civil wars, it retains a persistent hold within genocide literature, in part because of the emotional context of

⁷ Logit without rare events correction and assuming homoskedacity does yield a significant estimate, however, there is evidence of heteroskedicity.

⁸ BIC = 387. 5739 to 384. 3458

⁹ $\chi^2_4 = 0.74, p = 0.9462$

genocides. There is very little within the FL model that pertains to grievances directly, other than measures of fractionalization. These do not seem to be statistically significant. Moreover, the estimates obtained with the RELOGIT procedure are somewhat puzzling, since the logit coefficient of the ethnic fractionalization measure is positively signed while that of the religious fractionalization measure is negative. It would appear to make more theoretical sense that fractionalization in either form would have a consistent direction of effect. However, the confidence interval for both includes the possibility that neither have any effect on the odds of genocide onset.

Nevertheless, this does not necessarily indicate that grievances have no effect. To test this possibility more directly, a lagged variable coding for official state economic discrimination in the year before was added to all models. The level of discrimination should suggest the extent to which animosity based on economic differences existed in the year before genocide onset. In fact, this variable was not found to be significant in any of the five models.¹⁰

Polity

Given the attention to polity types in relation to genocides, it is surprising that the models above indicate that there is no evidence of an effect. Not only is the lagged polity score, indexed from -10 to 10, not statistically significant, but the estimates are quite close to zero. Therefore, even if increased error variance could be blamed for the lack of statistical significance, the effect size would be very small regardless. Nevertheless, it might be argued that the polity index is too prone to either observer bias or to inter-coder reliability problems to effectively proxy for polity type.

To cope with this issue, the models include two additional variables in models 3 and 5

¹⁰ $p > .401$ in all cases.

which provide a finer test of the effect of polity type. However, neither the estimated logit coefficient of the dichotomous variables coded 1 for democracy and coded 1 for anocracy (non-democratic states with polity scores above -6, that is not autocracies), are respectively significant. In fact, the estimated coefficient for the democracy variable indicates an increase in relative risk, about 126%, if all other variables are held at mean levels. Since this is neither consistent with theory nor is statistically significant, democratic status, having controlled for other factors, does not have an effect on genocide onsets relative to autocracies.

These findings as well as the non-significance of either of the fractionalization measures suggest that the degree to which political opportunities exist do not correlate with the onset of genocides given the other variables included in the models. If opportunity, as suggested by previous research (Krain 1999, Harff 2003) is the primary mechanism behind these events, then polity scores should be relevant. Moreover, the theory behind opportunity suggests that small minorities under autocratic regimes are most at risk. Autocracy may give opportunity, but the victimized groups must also be less able to withstand such attacks. The most fractionalized states, however, indicate no such increase in risk within these models as well.

Ruling Elites

Again, previous research has indicated that while the type of polity may be relevant, this may mask or proxy characteristics of the ruling elites which are much more directly related to the creation of an opportunity for genocide. While the included variables do not test for this possibility, if the polity scores correlate strongly with these characteristics, the irrelevance of polity would suggest that this is not the case. However, neither the ethnic character of the ruling elites (majority or minority culture) nor the ideological character of the ruling elites (majority or

Table 3: FL Model 1 with Ruling Elites

	Model 1	Model 2	Model 3	Model 4
	Coef./se	Coef./se	Coef./se	Coef./se
Civil War Onset	3.210*** (.472)	3.189*** (.481)	3.289*** (.490)	3.256*** (.499)
Per Capita GDP	-.427 (.259)	-.404 (.269)	-.442 (.264)	-.419 (.274)
Population	1.256* (.548)	1.274* (.556)	1.154* (.566)	1.162* (.578)
Mountainous Terrain	.480*** (.136)	.485*** (.134)	.449** (.137)	.459*** (.132)
New State	1.851* (.735)	1.786* (.727)	1.980** (.769)	1.905* (.750)
Elite Salient Minority		.582 (.564)		.532 (.526)
Exclusionary Ideology			.518 (.498)	.482 (.481)
Constant	-3.546*** (.504)	-3.663*** (.525)	-3.594*** (.522)	-3.699*** (.561)
No. of cases	2498	2498	2498	2498

Source: final_data.dta

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

minority ideology) as coded within the PITF dataset are strongly correlated with the polity score.

To test for the possible influence of these factors requires a change in methodology. The RELOGIT procedure is essentially a post estimation correction which relies on estimation of bias. The PITF dataset, however, is designed for use with a case control study, which is essentially a prior correction in bias. That is, problem observations are matched with non-problem observations randomly selected from a subset based on region and year. However, since the proportion of genocides is much higher in the case control study, a prior correction is necessary to control for rare event bias. The results of prior correction using RELOGIT and weighting positive occurrences according to proportion in the population is shown in Table 3.

Using the case controlled observations suggest that neither the presence of a salient

minority regime nor a regime with an exclusionary ideology are significant. Meanwhile the estimates of the significant variables from the previously estimated models are consistent with prior findings. While the GDP variable is again not significant in any of these estimates, this may be due to the more limited sample size which increases the error variance. However, the consistency of the estimates indicate that there is not much correlation between these variables and those discussed previously. Furthermore, these characteristics of the ruling regime do not explain much about genocide onsets that are not already explained within the other models.

Conclusions

The direct question of how well Fearon and Laitin's model of insurgency explain genocides is difficult to answer definitively. Significance of nearly every variable within these models is weak at best, after controlling for insurgency itself. These outcomes are tightly coupled theoretically and empirical analysis indicates that this is true within this dataset as well. Moreover, since country year observations serve as the units of analysis, it is difficult to determine whether one outcome is a cause and which is effect.

Nevertheless, the findings above suggest that the mechanism in question should not be ruled out. After controlling for insurgency, most of the hypothesized relationships are both statistically and practically significant, indicating that the theoretical model is able to explain some aspects of genocide onset. The most important of these are reliance on fuel extraction and new state status. In the first case, this lends credence to the concept of spoils motivating decision-making agents. In the second, relative state weakness which should lead to failure in negotiating and maintaining settlements. The mountainous variable is also significant and

suggests a larger effect of terrain that is resistant to controls for region and religion. Within the theory, it too makes settlements more difficult to reach, although in this case by making information more difficult to attain. Meanwhile other variables that have been posited in literature on genocides such as polity and ideology or ethnic character of the regime do not seem to be significant given the variables listed above.

However, there are issues which need to be outlined. Firstly, there are concerns over the reliability of the data. For example, some studies have argued that the number and severity of ethnic conflicts increased rapidly from 1940 to 1990 and declined after the Cold War (Gurr et al. 7). However, an alternative explanation may be that information on these conflicts became more widely and more easily available from 1940 to 1990, which in turn led to increased scrutiny of further conflict. As most of this research on these data began to be published in the early 1990's, strategies of conflict management became more established and may have become more successful.

Adding controls for period did not prove to be statistically significant, but the problems with inference using these data are not limited to these concerns. Indeed, most data of such conflict cover only the period between 1940 and 2000, which rules out the possibility of ascertaining the effect of ancient hostilities or indeed any explanatory variables which predate the earliest incidents in these datasets. In the opposite direction, it is not possible to make definitive statements about the likelihood of future genocidal events past a very small time frame of prediction, since it is possible that the 60 year time frame is just too short upon which to base conclusions.

For this reason, the findings resulting from this study can only be presented as evidence for causal effects rather than proof. In cases where clear controls were to be found, these were

tested where possible. However, it is simply not possible to control for every variable of interest, as the control and treatment cannot be randomly assigned. Rather, since these estimates are made in good faith, there is no reason to ignore the availability of data. Given that care has been given to reliability and measurement issues, these are included for analysis with the caveat that this study is primarily concerned with correlation and not causation.

Beyond problems with data, there is also the unsatisfactory conclusion that most of the correlations found above are only weakly significant – and furthermore, some hypothesized covariates are not significant at the .05 level. While problems with population and GDP measures are discussed above, these issues may not only be the results of rare events analysis. More specifically, the models presented above may be suffering from issues of misspecification. Although the models were tested with variables that were proposed in other studies, the issue of omitted variables is a major source of concern. There may be excluded variables which are responsible for even the small amount of weak significance. Again, however, it must be pointed out that there is no claim that these covariates in fact cause genocides. Rather, they should effect a rational decision making structure which is the mechanism behind genocide onsets. As such, these are akin to proxy variables where error variance is expected to be higher than expected. Furthermore, there should not be expected as great effects after controlling for civil war onset, because these variables should also determine the likelihood of civil war.

There are also issues from a theoretical standpoint. One is whether genocides are a indeed an extreme form of counterinsurgency. As previously mentioned, genocides are an act of intent, and therefore difficult to quantify. By defining genocides within the model as an extreme level of counter-insurgency, it is possible that the operational definition no longer corresponds to theory. Worse, either or both of these definitions may be incongruent with the phenomenon of genocide

in common use. Another theoretical issue is that the model is far too simplistic for realistic use. For example, it does not account for repeated play or the fact that the government must play this game with all insurgent groups within the state. However, the model, as all models are intended, is an attempt to simplify a complex mechanism. At its core is interaction between state and opposition groups responding rationally to incentives. Whether there is evidence for this interaction relative to genocide is the basic issue, not the specifics of the model. Moreover, since the empirical model does have explanatory value, there is at least this evidence that the concept of genocide as a form of counter-insurgency does have merit.

Still, even if the model's appropriateness is accepted, the covariates within the empirical analysis are open to interpretation. That is per capita GDP, mountainous terrain, instability and new statehood may indeed indicate a higher risks of genocide but that does not necessarily suggest that it is through the mechanism proposed in the theoretical model. There may be an alternative causal pathway that is not yet apparent. It is difficult, however, to test for this. Again, the appropriateness of a particular model cannot be definitively proven. Yet the fact that there is empirical evidence which indicates that the simple model does have at least weak explanatory value does have some benefit. However, further research is necessary to both strengthen the theoretical model and to find additional or better proxies which may better demonstrate its irrelevance or strength.

These problems notwithstanding, the findings do indicate that the mechanism in Fearon and Laitin's theoretical model of insurgency also plays a role in determining the onset of genocides as well. That is, there is a component to the likelihood of genocides that is dependent on a structure of payoffs. Covariates such as GDP, terrain, new statehood, dependence on natural resources and population to some extent serve to increase the relative risk of genocide through

their effect on these payoffs. The estimated models indicate that not only are most of these hypothesized covariates statistically significant, but are, equally importantly, practically significant as well. Moreover, the findings show that variables from earlier empirical studies are not as consequential, throwing into doubt theories of genocide based on grievances, ideology and polity.

Clearly, there is much more research necessary to strengthen the theoretical model. Repeated play, multiple opposition groups, an increased number of strategies should also help explain much more of the variance in genocide onsets. Moreover, data at a dyadic level, measuring directly such variables of interest as population size, income and employment at the group, rather than state, level should reveal whether the model is, in fact, more or less powerful than the findings above suggest. Case study should also more explicitly indicate whether there is qualitative data which point to the mechanism in question. All of these may reveal that not only if there is additional quantitative evidence for this theory, but how much it is able to explain and, more importantly, how useful it may be in the future.

Indeed, there is a basic human need to believe that insanity is the only rational explanation for genocides. Yet these findings argue for a more optimistic view. If genocides are indeed motivated by this payoff structure, then there are prescriptions. Economic development, international aid and fostering economic equality are some of the policy options that come quickly to mind with regard to prevention. Monitoring civil wars in resource dependent states, new states, or those with mountainous or jungle terrains should be a priority as a policy of detection. Even as it seems naturally repellant to view genocidal atrocities as acts of simple self-interest, it may be that it provides a key framework for understanding how conflict devolves into murder, and therefore how best to prevent it.

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