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# On the determinants of internal armed conflict

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**On the determinants of internal armed conflict**

by

**Nicholas James Hasty**

A thesis submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of

**MASTER OF ARTS**

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2015

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## ABSTRACT

This study expands upon literature on the cross-national causes of civil war and terrorism by combining the two concepts into an aggregate variable called internal armed conflict. It applies relative deprivation theory to politically excluded ethnic groups and also separates those two entities to examine socioeconomic desperation and ethnic exclusion respectively. From a review of the literature I identify eight variables that were found to be statistically significant predictors of either civil war or terrorism in previous studies and I use them as control variables in my models. I find that countries with excluded ethnic groups are somewhat more likely to experience internal armed conflict. Several control variables including ethnic fractionalization, log population, and percentage of years a country was under imperial or colonial rule were significant predictor variables across all the models. I conclude with a discussion of the implications of the findings for extant and future literature and for policies that seek to reduce internal armed conflict.

## INTRODUCTION

A common approach to the topics of terrorism or civil war is to examine the causes of either by conducting a large-N cross national study. This study follows that trend by testing relative deprivation theory as applied to politically excluded ethnic groups to examine if countries that have politically excluded ethnic groups- groups which are also socioeconomically desperate- are more prone to conflict. The application of relative deprivation theory to ethnicity is in line with studies, discussed in the literature review section below, by James Piazza and Alam Saleh. I also test socioeconomic desperation and ethnic exclusion separately. When the socioeconomic factors are not tied to excluded ethnic groups within a country they apply to the entire population of a country, but when they are combined with excluded ethnic groups they are meant to become relative measures.

My study clarifies the dependent variable across many studies of this kind by using internal armed conflict as an aggregate of different forms of internal conflict such as terrorism or civil war. To operationalize ethnic power relations I use the Ethnic Power Relations (EPR) dataset and its variable “excluded ethnic population” and to operationalize socioeconomic desperation I use GDP per capita and unemployment. The results show that as countries have increasing proportions of politically excluded ethnic groups they are more likely to experience internal armed conflict. Also, if countries have increasing ethnic fractionalization, population, and proportion of years under colonial or imperial rule, they are more likely to experience internal armed conflict. The empirical results of my study suggest that the prescribed policy for countries that want to reduce the likelihood that they will experience internal armed conflict is to generally enforce a more equitable distribution of political power among ethnic groups, particularly excluded ethnic groups.

## LITERATURE REVIEW

The extant literature on the determinants of civil war and terrorism at a cross-national level may focus on different causes such as politics/governance, underdevelopment or general poverty, microeconomic factors such as unemployment or GDP per capita, or macroeconomic factors such as the level of economic openness of a country to outside trade. Many times authors combine two or more of these concepts in a simple analysis without adding too many variables, which would sacrifice elegance in a quantitative model. These all consider the country as the unit of analysis. Case studies are a rarity and are usually relegated to a select few examples such as Palestine (Berrebi 2007, Krueger and Maleckova 2003).

While the literature on the determinants of civil war or terrorism allows for a breadth of theoretically viable independent variables, the dependent variable is a key component to models that may drastically change the theory being tested. For example, some authors focus only on domestic terrorism while for others it is transnational or international terrorism. If the focus is on domestic terrorism, much of the time the theory is about marginalized minority groups within a country and this has a lot of theoretical cross-over with civil war literature. Those who focus on transnational issues may be trying to measure if a country is impacted by terrorists from other countries. Causes of transnationalism may emphasize the amorphous nature of franchises such as Al-Qaeda that transcend and seemingly disregard state boundaries. There is no clear consensus among scholars in this field about the definition of civil war or terrorism and so to some extent they are speaking past one another by using different operational definitions of the term.

As aforementioned, there is a lot of crossover between the civil war literature and the domestic terrorism literature. And depending on how a scholar defines terrorism, many tactics used by militants in civil wars may be categorized as terrorism. For that matter, the use of certain

tactics by insurgents or other domestic or home-grown armed groups may be deemed as civil war or terrorism. Authors including Nauro Campos and Martin Gassebner argue that terrorism differs from civil wars and other forms of internal violence because the main objective is to “maximize media exposure so as to further the atmosphere of fear.”<sup>1</sup> However, the two authors found that “civil wars and guerrilla warfare are robustly associated with various aspects of international terrorism” because they “provide for the honing of military, tactical, and organizational skills needed to carry out terrorist acts”.<sup>2</sup> Conversely, Stathis Kalyvas argues that the logic of terrorism- the use of violence to induce compliance on the part of civilians- “informs the use of violence in civil wars in a fundamental way”.<sup>3</sup> Thus terrorism and civil war, while they are two wholly separate concepts, may complement one other in functionally achieving the same end. Because of this, I do not differentiate between terrorism, civil war, and any other type of domestic violence in a country: I use the term internal armed conflict. In doing so I allow myself to relate theory from each one of the sub-groups of the aggregate such as civil war and use it for the concept. Doing so may sacrifice differentiation between the subcomponents of the concept, but to help compensate for potential varied results between terrorism and civil war I will include separate models of each to match my models of the aggregate. This study explores the relationship between the political exclusion and socioeconomic desperation of ethnic minority groups as two independent variables and internal armed conflict in a country as the dependent variable. The following is a discussion of such theories that touch on aspects of this relationship.

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<sup>1</sup>Campos, N., & Gassebner, M. (2013). International Terrorism, Political Instability and the Escalation Effect. *Economics & Politics*, 25(1), 27-47. Retrieved October 30, 2015, from <http://onlinelibrary.wiley.com/doi/10.1111/ecpo.12002/epdf>, pp. 28

<sup>2</sup> Ibid, pp. 43-44

<sup>3</sup>Kalyvas, S. (2004). The paradox of terrorism in civil war. *The Journal of Ethics*, 8(1), 97-138. Retrieved October 30, 2015, from <http://link.springer.com/article/10.1023/B:JOET.0000012254.69088.41>, pp. 97



## Government and Democracy

Academic discussions on political aspects as causes of terrorism many times frame the discussion based on a spectrum of democracy to non-democracy, focusing on factors such as political freedom, political participation, or civil liberties. As of a 2011 assessment 40 out of 43 studies on this topic featured some measure of democracy.<sup>4</sup> Such discussions sometimes lead to public policy conclusions that may support or undermine arguments for democratization as a foreign policy approach to help prevent non-democratic countries from engendering terrorists.

Alberto Abadie discusses the relationship between political freedom and terrorism. He uses Freedom House's Political Rights Index to measure political freedom in a country via political rights, along with control variables such as linguistic, ethnic, and religious fractionalization and geography and climate.<sup>5</sup> His study found that "political freedom has a non-monotonic effect on terrorism", meaning intermediate levels of political freedom make countries more predisposed to terrorism compared to "countries with high levels of political freedom or countries with highly authoritarian regimes".<sup>6</sup> A similar study by Basuchoudhary and Shughart measures, among other variables, the relationship between political freedom as measured by taking the average of Freedom House's political rights and civil liberties and transnational terrorism. They found that the "absence of political rights and civil liberties in a country has no impact on the number of terrorist attacks perpetrated by citizens in that country".<sup>7</sup> A study by Peter Kurrild-Klitgaard, Mogens Justesen, and Robert Klemmensen is similar to Abadie's in that

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<sup>4</sup> Gassebner, M., & Luechinger, S. (2011). Lock, stock, and barrel: A comprehensive assessment of the determinants of terror. *Public Choice*, 149(3-4), 235-261. Retrieved March 7, 2015, from <http://link.springer.com/article/10.1007/s11127-011-9873-0>, pp. 237

<sup>5</sup> Abadie, A. (2005). Poverty, Political Freedom, and the Roots of Terrorism. *American Economic Review*, 92(2), 50-56. Retrieved March 7, 2015, from <http://www.nber.org/papers/w10859>, pp. 4-5

<sup>6</sup> Ibid, pp. 3

<sup>7</sup> Basuchoudhary, A., & Shughart, W. (2010). On Ethnic Conflict and the Origins of Transnational Terrorism. *Defense and Economics*, 21(1), 65-87. Retrieved March 7, 2015, from [http://www.tandfonline.com/doi/abs/10.1080/10242690902868343#.VP\\_eEvzF98E](http://www.tandfonline.com/doi/abs/10.1080/10242690902868343#.VP_eEvzF98E), pp. 76-77

they measure the effect of political rights and civil liberties separately on the “probabilities that a country will experience transnational terrorist attacks and that a given terrorist originates in a particular country,” respectively.<sup>8</sup> Similar to Abadie, they also measure political freedom and civil liberties using the Freedom House’s indices.<sup>9</sup> Their results show inverse significant relationships between political freedom and civil liberties and terrorism.<sup>10</sup>

While Abadie’s and Kurrild-Klitgaard et al.’s analyses focus on political freedom as an independent variable, Quan Li uses other features of democracy including democratic participation under democratic systems because it allows citizens with grievances to “exert more influence on their own government so that they can seek favorable policy changes or compensation more successfully”.<sup>11</sup> Another measure of democracy he uses is institutional constraints because, he argues, they prevent democracies from enacting strong antiterrorist strategies because of “institutional checks and balances.”<sup>12</sup> He used the POLITY IV dataset to measure democratic participation and found it to be a statistically significant variable with negative relation to the number of transnational terrorist incidents in a country. He also found government constraint, found in the POLITY IV database, to be positively correlated with transnational terrorist incidents.<sup>13</sup> Closely related to Li’s two operational components of democracy is James Piazza’s concept of democracy, which is a function of two variables: the average of Freedom House’s political rights and civil liberties and average polity scores as two

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<sup>8</sup> Kurrild-Klitgaard, P., Justesen, M., & Klemmensen, R. (2006). The political economy of freedom, democracy and transnational terrorism. *Public Choice*, 128(1-2), 289-315. Retrieved March 7, 2015, from <http://link.springer.com/article/10.1007/s11127-006-9055-7>, pp. 296

<sup>9</sup> Ibid, pp. 300

<sup>10</sup> Ibid, pp. 309

<sup>11</sup> Li, Q. (2005). Does Democracy Promote or Reduce Transnational Terrorist Incidents? *The Journal of Conflict Resolution*, 49(2), 278-297. Retrieved March 7, 2015, from <http://jcr.sagepub.com/content/49/2/278.short>, pp. 281

<sup>12</sup> Ibid, pp. 283

<sup>13</sup> Ibid, pp. 285, 287

possible causes of terrorism originating in a country.<sup>14</sup> His study found a positive relationship between democracy and terrorism: meaning that an increase in variables used to measure democracy was correlated with an increase in domestic terrorism.<sup>15</sup>

There is far too much literature on this sub-topic to cover, but just based on an assessment of the articles above I glean that it is inconclusive as to whether variables used to measure democracy such as political rights, civil rights, or democratic participation actually reduce the incidences of domestic or transnational terrorism. This conclusion is unsatisfying and warrants further analysis of democracy as a possible cause of terrorism.

#### Socioeconomic Desperation

Another major theme in the literature exploring determinants of terrorism is socioeconomic development factors such as GDP per capita, unemployment, and literacy rate. Usually the public policy or foreign policy implication for these studies is for wealthier Western states such as the United States or international bodies such as the United Nations to give development aid to ailing countries as a long-term preventative measure against terrorism or other armed conflict that may destabilize a country or region.

In addition to measuring political freedom as one of the primary independent variables, Abadie in the same study discussed above also measures poverty in the form of GDP per capita, or in other regressions he used the UNDP's Human Development Index (HDI), a "summary measure of human development"<sup>16</sup> that includes GDP per capita as part of its aggregate along with life expectancy at birth, adult literacy rates, and the combined primary, secondary, and

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<sup>14</sup> Piazza, J. (2008). Do Democracy and Free Markets Protect Us From Terrorism? *International Politics*, 45, 72-91. Retrieved March 7, 2015, from [http://www.tandfonline.com/doi/abs/10.1080/095465590944578#.VP\\_o0PzF98E](http://www.tandfonline.com/doi/abs/10.1080/095465590944578#.VP_o0PzF98E), pp. 78

<sup>15</sup> Ibid, pp. 83

<sup>16</sup> Human Development Index (HDI) <http://hdr.undp.org/en/content/human-development-index-hdi>

tertiary gross school enrollment ration as possible reasons a country may experience terrorism.<sup>17</sup> He did not find a significant association between risk of terrorism and poverty.<sup>18</sup> Kevin Goldstein built on Abadie's study by updating his dataset and including unemployment rate as an additional economic measure.<sup>19</sup> Similar to Abadie's study, he used the World Market Research Centre's Global Terrorism Index that measures terrorism risk for countries.<sup>20</sup> He measured unemployment by country by using data from the International Labour Organization (ILO) and ultimately found it to be a significant variable.<sup>21</sup> Similar to Abadie, he found that GDP per capita was not a statistically significant variable.<sup>22</sup> Perhaps this means that so long as people in a country are employed, no matter what their per capita income, they are less likely to become involved in terrorism. One possible problem he identified in the study is that of endogeneity or reverse causality for unemployment as a cause of terrorism because terrorism as an independent variable could have a "negative impact on economies and can disturb business, reduce growth, and very possibly as a consequence raise unemployment".<sup>23</sup>

Another study that incorporates unemployment as a cause of terrorism is Brian Burgoon's that argues social welfare policies that aim to reduce "economic insecurity, inequality, poverty, and religious-political extremism" should reduce the likelihood a country will experience international or domestic terrorism.<sup>24</sup> So theoretically this focuses on the country as a unit of analysis that may inadvertently cause terrorism because of its social spending (or lack thereof).

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<sup>17</sup> Abadie, pp. 4-5

<sup>18</sup> Ibid, pp. 9

<sup>19</sup> Goldstein, K. B. (2005). Unemployment, inequality and terrorism: Another look at the relationship between economics and terrorism. *Undergraduate Economic Review*, 1(1), 6., pp. 4

<sup>20</sup> Ibid, pp. 5

<sup>21</sup> Ibid, pp. 7, 11

<sup>22</sup> Ibid, pp. 15

<sup>23</sup> Ibid, pp. 14

<sup>24</sup> Burgoon, B. (2006). On Welfare and Terror Social Welfare Policies and Political-Economic Roots of Terrorism. *The Journal of Conflict Resolution*, 50(2), 176-203. Retrieved March 7, 2015, from <http://jcr.sagepub.com/content/50/2/176.short>, pp. 176

His independent variable is a function of several measurements including total spending/revenue as a percentage of GDP, total transfers (social security and health spending) as a percentage of GDP, and total welfare spending (total social security and health, plus education spending) as a percentage of GDP that combines the other two variables with public spending on primary, secondary, and tertiary education.<sup>25</sup> The results of the study showed a significant inverse relationship between a country's total welfare spending and domestic/transnational terrorism by its citizens.<sup>26</sup>

Another study that explores the relationship between poverty and terrorism is James Piazza's in 2006 that measures poverty, inequality, and low economic development as possible causes of terrorism.<sup>27</sup> The independent variables include HDI, Gini coefficient, unemployment, and calories per capita or average daily per capita supply of calories.<sup>28</sup> He also measures a set of political variables including state repression, change in repression, and number of parties.<sup>29</sup> He found that the poverty factors such as GDP per capita inclusive in HDI, unemployment, and food security did not significantly correlate with increased levels of terrorism. However the political factors as a second set of independent variables did prove to be significant.<sup>30</sup>

From the studies discussed relating to socioeconomic factors and terrorism, I glean that GDP per capita has yet to be proven as a significant cause of. Unemployment has had mixed results, proving significant in Goldstein's study but not Piazza's, so this variable also needs further testing. Burgoon's study lends support to the argument that social-welfare spending in a

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<sup>25</sup> Ibid, pp. 187-188

<sup>26</sup> Ibid, pp. 197

<sup>27</sup> Piazza, J. (2006). Rooted in Poverty?: Terrorism, Poor Economic Development, and Social Cleavages. *Terrorism and Political Violence*, 18(1), 159-177. Retrieved March 7, 2015, from [http://www.tandfonline.com/doi/abs/10.1080/095465590944578#.VP\\_o0PzF98E](http://www.tandfonline.com/doi/abs/10.1080/095465590944578#.VP_o0PzF98E), pp. 159

<sup>28</sup> Piazza 2006, pp. 165-166

<sup>29</sup> Ibid, pp. 168

<sup>30</sup> Ibid, pp. 170-171

country reduces terrorism while Piazza's suggests that overall measures of poverty such as HDI do not.

### Ethnicity

A subset of the determinants of domestic terrorism literature focuses on ethnic minority groups within countries as the perpetrators. It also has a lot of cross over with civil war literature. One of the prominent theories that seek to explain domestic conflict on the part of ethnic groups is Ted Gurr's relative deprivation theory. Relative deprivation theory describes "the tension that develops from a discrepancy between the 'ought' and the 'is' of collective value satisfaction, and this disposes men to violence...the intensity of relative deprivation varies strongly in terms of the average degree of perceived discrepancy between value expectation and value capabilities".<sup>31</sup> Based on Gurr's theory, Alam Saleh asserts that when a state discriminates against a certain ethnic group by enforcing economic inequality, marginalizing them politically, and denying them employment opportunities, it is likely to increase ethnic conflict.<sup>32</sup>

Another author that borrowed from Gurr was James Piazza in his 2011 study on the determinants of domestic terrorism. He hypothesizes that economic discrimination against Minorities at Risk (MAR) and low HDI in a country make it more likely to experience domestic terrorism.<sup>33</sup> In doing so he introduces terrorism as a dependent variable to Gurr's theory, since the relative deprivation model initially sought to explain ethnic rebellions, riots, and civil wars: not terrorism.<sup>34</sup> His contribution to the theory is to add "two intervening factors in the

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<sup>31</sup> Saleh, A. (2013). Relative Deprivation Theory, Nationalism, Ethnicity and Identity Conflicts. *Geopolitics Quarterly*, 8(4), 156-174. Retrieved March 7, 2015, from <http://en.journals.sid.ir/ViewPaper.aspx?ID=287195>, pp. 165

<sup>32</sup> Ibid, pp. 165

<sup>33</sup> Piazza, J. (2011). Poverty, minority economic discrimination, and domestic terrorism. *Journal of Peace and Research*, 48(3), 339-353. Retrieved March 7, 2015, from <http://jpr.sagepub.com/content/48/3/339.short>, pp. 339

<sup>34</sup> Ibid, pp. 341

relationship between relative deprivation and political violence - group grievance and organizational opportunity....”<sup>35</sup> His study found that economic discrimination against minorities was a significant predictor and that the “absence of and remediation of minority economic discrimination are significant negative predictors of domestic terrorism.”<sup>36</sup> Poverty measured via HDI was not a significant predictor variable and in fact “countries with higher levels of economic development experience more domestic terrorism than do poorer countries”.<sup>37</sup> Atin Basuchoudhary and William Shughart II also wrote about ethnic conflict and terrorism, but they expanded their dependent variable to transnational terrorism. They measure the relationship between ethnic tensions in a country and transnational terrorism and theorize that “competition for access to economic resources or political power may trigger conflicts between different ethnic groups as they jockey for position.”<sup>38</sup> They found that ethnic tension is more likely to engender terrorism and that “economic freedoms lessen the tendency for ethnic tensions to spawn transnational terrorism over the entire sample”.<sup>39</sup>

In their examination of ethnicity and civil war, the oft-cited study by James Fearon and David Laitin seeks to explain whether ethnic or religious characteristics or conditional factors such as poverty make a country more likely to experience civil war.<sup>40</sup> They hypothesize that ethnic or religious diversity is associated with a higher risk of civil war in a country.<sup>41</sup> Their results showed that conditional factors such as poverty, a large population, and instability were

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<sup>35</sup> Ibid, pp. 341

<sup>36</sup> Ibid, pp. 348

<sup>37</sup> Ibid, pp. 348

<sup>38</sup> Basuchoudhary and Shughart, pp. 65, 71

<sup>39</sup> Ibid, pp. 85

<sup>40</sup> Fearon, J., & Laitin, D. (2003). Ethnicity, Insurgency, and Civil War. *American Political Science Review*, 97(1), 75-90. Retrieved March 7, 2015, from

<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=142717&fileId=S0003055403000534>,

pp. 75

<sup>41</sup> Ibid, pp. 78

statistically significant, unlike “ethnic and religious diversity or measures of grievances such as economic inequality, lack of democracy or civil liberties, or state discrimination against minority religions or languages”.<sup>42</sup> Another article about ethnicity and civil war is from Elaine Denny and Barbara Walter, who take a qualitative approach in arguing that ethnic groups, on average, are more likely to have grievances against their host state and “are likely to have an easier time organizing support and mobilizing a movement, and are more likely to face difficult-to-resolve bargaining problems”.<sup>43</sup> They discuss the extant literature about ethnicity as a cause for civil war and go on to discuss their theory without actually testing it. One problem they identify is the lack of available data on the topic, but they acknowledge that emerging data such as the Ethnic Power Relations (EPR) data set that measures ethnic group’s access to central power in a country as a good start because the “disaggregated data allows researchers to study civil wars at a group rather than country level”.<sup>44</sup> In fact, the creators of the EPR, Andreas Wimmer, Brian Min, and Lars-Erik Cederman actually used their dataset to study ethnic diversity as a possible cause of armed conflict. They argue it is not mere ethnic diversity that engenders conflict; rather it is “certain ethnopolitical configurations of power” that make a state more likely to experience armed conflict.<sup>45</sup> Their theory that “armed rebellions are more likely when the state excludes large sections of the population from central state power on the basis of their ethnic background” is consistent with the use of EPR data for the main independent variable since it measures minorities’ “degree of access to executive-level state power- from total control of the

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<sup>42</sup> Ibid, pp. 88

<sup>43</sup> Denny, E., & Walter, B. (2014). Ethnicity and Civil War. *Journal of Peace and Research*, 51(2), 199-212. Retrieved March 5, 2015, from <http://jpr.sagepub.com/content/51/2/199.short>, pp. 199

<sup>44</sup> Ibid, pp. 208

<sup>45</sup> Wimmer, A., Cederman, L., & Min, B. (2009). Ethnic Politics and Armed Conflict: A Configurational Analysis of a New Global Data Set. *American Sociological Review*, 74(2), 316-337. Retrieved March 7, 2015, from <http://asr.sagepub.com/content/74/2/316.short>, pp. 316



government to overt political discrimination and exclusion”.<sup>46</sup> The results of their study support their hypothesis that the “likelihood of armed confrontation increases as the center of power becomes more ethnically segmented and as greater proportions of a state’s population are excluded from power because of their ethnic background”.<sup>47</sup>

From the discussion of literature that tests the relationship between ethnic discrimination and poverty and domestic terrorism, ethnic characteristics and civil war, and ethnopolitical configurations of power and armed conflict, the results are mixed. It is difficult to make a comparison among the three because of empirical and theoretic differences between the sub-topics. One useful thing to glean from the discussion is the importance of a dataset such as EPR that measures armed conflict as an aggregate but still allows a researcher to disaggregate into a sub-category such as civil wars, as discussed by Denny and Walter.

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<sup>46</sup> Ibid, pp. 317

<sup>47</sup> Ibid, pp. 334

## NEW THEORETICAL CONTRIBUTION

The literature above informs my own theory about the relationship between ethnic power relations and socioeconomic desperation as causes of internal armed conflict. Saleh and Piazza did a good job of clarifying and expanding upon Gurr's relative deprivation theory in their studies by applying the theory to ethnic or minority groups. I want to start where Piazza left off in his attempt to measure minority discrimination, but instead of measuring economic discrimination I want to measure the political exclusion of ethnic groups by using the EPR data set instead of the Minorities at Risk (MAR) data set. The former makes more sense theoretically because it measures relative political power, which directly taps into a relative measure of deprivation. Moreover, the unit of analysis for the EPR data set is ethnic groups within countries, whereas the unit of analysis for the MAR data set is minority groups specifically and this is not a relative measure among different ethnic groups within countries. Piazza includes HDI as a second variable in his study, which seems redundant because HDI is supposed to measure overall human development<sup>48</sup> and he already includes an economic variable from the MAR data set in his model. Moreover, HDI does not represent relative deprivation theory effectively because it is partly a function of life expectancy at birth and adult literacy and these are not the most immediate needs of poor people: a poor person can be illiterate and still be content enough to not want to cause internal conflict. I concede that HDI may be a valid measure of relative desperation because if it is meant to be an overall measure of human development and some of these measures- notably life expectancy at birth- would cause people in a country to become desperate if they have low development relative to more affluent groups in the same country.<sup>49</sup> However, I argue that the most pressing factors that make people desperate in a country are

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<sup>48</sup> Human Development Index (HDI) <http://hdr.undp.org/en/content/human-development-index-hdi>

<sup>49</sup> Ibid

economic and from economic prosperity follow measures of overall human development such as those measured in HDI. Another problem with HDI is that it is an aggregate measure of three sub-factors and this makes it difficult or impossible to tease out the different components just by looking at the overall measure. If an excluded ethnic group in a country is found to be socioeconomically desperate, does that mean that group is predominantly suffering in the area of life expectancy, education, or GNI, or all of them equally? In the results and analysis section I include each of the three models with HDI as the independent variable to measure socioeconomic desperation instead of GDP per capita and unemployment to see if the results are any different from that of the primary models tested.

A variable that taps into relative deprivation theory is unemployment because excluded ethnic minority groups that lack opportunity for income to use as sustenance, let alone for social advancement, will be more likely to engage in internal armed conflict since, along with GDP per capita, these are the most immediate needs a group requires to survive. To reiterate the argument above, I view these purely economic factors as precursors to other possible measures of development such as HDI. Unemployment and GDP per capita as variables, when combined, tap into the concept of socioeconomic desperation, which is a slight modification of relative deprivation theory. If these two separate socioeconomic needs are not adequately met and the ethnic minority group also lacks political power relative to the center of power in the country to address its grievances, that country is more likely to experience internal armed conflict from the ethnic minority group. Thus my theory is a combination of ethnic exclusion from political power and relative deprivation theory as a possible cause of internal armed conflict. Also, I am separating socioeconomic desperation and ethnic exclusion and using proxy measures to assess their explanatory power against the same dependent variable, internal armed conflict. When I

separate the two theories, the result is that one model tests the effect of an asymmetrical political power dynamic in countries in terms of different ethnic groups, and the other tests the effect of overall country socioeconomic desperation factors.

## HYPOTHESES

In this study I am building from previous research on the causes of terrorism and civil war by testing the effects of excluded ethnic groups and socioeconomic desperation factors against internal armed conflict. I hypothesize that countries that have a large proportion of its population that are excluded ethnic groups and also suffer from socioeconomic desperation pressures including low GDP per capita and high unemployment are more likely to experience internal armed conflict. I am testing three hypotheses, the first of which is:

H1 Null: The proportion of politically excluded ethnic groups that also face increasing socioeconomic pressure has no effect on the likelihood of a country to experience internal armed conflict.

H1 Alternative: Countries with increasing proportions of politically excluded ethnic groups that also face increasing socioeconomic pressure are more likely to experience internal armed conflict.

The key independent variable in the first hypothesis is an interaction of ethnic exclusion and the two socioeconomic desperation factors separately. Those two socioeconomic desperation factors in the model are GDP per capita and unemployment. Normally, these two variables are absolute country-wide measurements, but when I combine them with the excluded ethnic groups within countries I intend for them to become relative measures for those excluded ethnic groups relative to the rest of the population in any given country. The theoretical justification is that excluded ethnic groups that lack political power to address grievances and are also under the

pressure of socioeconomic factors are more likely to resort to armed conflict with a host country to restore socioeconomic contentment.

The second set of hypotheses builds on the work by Fearon and Laitin in their article that concluded ethnic and linguistic fractionalization is not a significant determinant of civil wars and Piazza's that concluded minority economic discrimination is not a cause of domestic terrorism. Instead of measuring fractionalization and economic discrimination for ethnic groups, I want to measure exclusion from power because if an ethnic group is politically disenfranchised in their host county relative to the center of power they may be more likely to take violent measures to express grievances. Ethnic fractionalization speaks more to the diversity in a country, not the relative power dynamic and if groups are marginalized.

H2 Null: The proportion of ethnic groups that are excluded from political power has no effect on the likelihood of a country to experience internal armed conflict.

H2 Alternative1: Countries with increasing proportions of ethnic groups that are excluded from power are more likely to experience internal armed conflict.

H2 Alternative2: Countries with increasing proportions of ethnic groups that are excluded from power are less likely to experience internal armed conflict.

For the second set of hypotheses, I included separate alternative hypotheses for a one-tailed test on either tail of the distribution. This is to say the exclusion of ethnic groups in a country may increase or decrease the likelihood that a country will experience internal armed

conflict. I am testing either possibility because, on the one hand, the excluded ethnic groups may feel so marginalized and disenfranchised that they are not willing to risk engaging in conflict. Contrariwise, the excluded ethnic groups may feel they can leverage enough support behind them to mount violence against their oppressors and the risk of being put down is worth fighting. So the exclusion of ethnic groups from political power may breed more or less conflict depending upon how marginalized and disenfranchised the groups are if the risk of conflict is worth the reward of potentially more political power.

The third set of hypotheses focuses on socioeconomic variables and is heavily influenced by the relative deprivation theory conceived of by Gurr and expanded upon by Saleh and Piazza. The theoretical justification for measuring these variables including GDP per capita and unemployment is that if a population is generally unemployed and have a low income per capita they are under socioeconomic pressure and that pressure creates an urgency to act violently against a host state in order to reach a state of socioeconomic contentment. To clarify, the socioeconomic variables are not meant to measure overall development or rate of poverty.

H3 Null: Socioeconomic pressures have no effect on the likelihood that a country will experience internal armed conflict.

H3 Alternative: Countries that have increasing socioeconomic pressures are more likely to experience internal armed conflict.

## VARIABLES AND MEASUREMENTS

### Dependent Variable

As I discussed in the theory section, I am aggregating subcategories of internal violence such as domestic terrorism and civil war into internal armed conflict. There are varying definitions of terrorism, civil war, and other types of conflict within countries and by using an aggregate of all of them it makes for less definitional disagreement over the meaning of the dependent variable. Also, as I discussed in the literature review, terrorism and civil war may complement each other. However, I decided to test the three models and corresponding hypotheses above with terrorism or civil war separately to see if the results between the two differ. These tests are discussed in the results and analysis section. I must clarify that I consider terrorism and civil war as the only two subsets of internal armed conflict. I collected data on terrorism from the Global Terrorism Database, which defines a terrorism incident based on a list of three criteria, which all must be met including: the incident must be intentional, the incident must entail some level violence of immediate threat of violence, and the perpetrators of the incidents must be sub-national actors.<sup>50</sup> If in any given country and specific year there was internal armed conflict and it was not terrorism based on the definition above, it must have been civil war.

To measure the dependent variable I am using the UCDP/PRIO Armed Conflict Dataset's variable called "int" for intensity and modifying it to create my own categorical variable called "internal armed conflict". In a given year if a country experiences internal armed conflict I will code it as a 1; if there was no internal armed conflict, I will code it as a 0, and this will allow me to estimate the likeliness that a country experiences internal armed conflict. To clarify, the

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<sup>50</sup> Global Terrorism Database Codebook. (2015, June 1). Retrieved November 8, 2015, from <http://www.start.umd.edu/gtd/downloads/Codebook.pdf>



UCDP defines an “Armed Conflict” as “a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths”.<sup>51</sup> A possible limitation of this criterion is that there may be armed conflict that, while resulting in less than 25 battle-related deaths, is otherwise viable. This definition necessarily includes terrorism against the government of the state or civil war against the government of the state. I chose this measure because it is an effective means to encapsulate all forms of conflict within any given country, which include terrorism and civil war. That is not to diminish the significance of other forms of internal armed conflict, but it is the case that most of the literature focuses on terrorism and civil war. In order to narrow this down armed conflict to internal armed conflict, I am restricting the “type” of conflict variable within the dataset to only (3) internal armed conflict that occurs between the government of a state and one or more internal opposition group(s) without intervention from other states.<sup>52</sup>

### Independent Variables

I am using the Ethnic Power Relations 3.0 dataset’s variable “exclpop”, which is a measure of the size of excluded population relative to total population, to measure the first independent variable.<sup>53</sup> It makes more sense to measure the size of the population rather than the number of ethnic groups which are exploited because the size of the groups themselves may vary. The variable is a continuous measurement for a proportion out of a total of 1.00. A possible flaw of using this measurement is that it does not actually say anything about the degree of

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<sup>51</sup> Ibid

<sup>52</sup> Ibid, pp 9

<sup>53</sup> Wimmer, A., & Duhart, P. (2014, December 31). Ethnic Power Relations 3.01. Retrieved March 3, 2015, from <http://www.epr.ucla.edu/>

exclusion; it only speaks to whether or not they (the ethnic groups) are excluded. Unfortunately, the EPR 3.0 dataset does not contain a measure capturing more precisely the level of exclusion faced by groups. As I will discuss in the next section about controls, I include ethnic fractionalization as a control to measure the ethnic diversity in a country. I am choosing the exclusion of ethnic groups rather than simply diversity because I want to get a measure of relative ethnic power dynamics in a country. Ethnic polarization, which is the “probability that two randomly selected individuals will belong to different ethnic groups”<sup>54</sup>, also does not effectively measure the relative ethnic power dynamics in a country.

Two different measurements including GDP per capita and unemployment will be used as proxies for the socioeconomic desperation concept. I chose these two proxy variables because I theorize that people’s most basic needs are economic in nature and that other needs, such as indicators of development found in variables such as HDI, follow from economics. If citizens in a country are unable to make an income to purchase resources and are not employed, they will not be able to advance themselves in other ways such as healthcare or education. I applied a logarithmic transformation to both these variables after I observed that they had a skewed distribution in the original data. GDP per capita is a continuous variable that measures the standard of living in people in a country and it is from the Ethnic Power Relations dataset. Unemployment is a measure of the total (percent of the total labor force) that is “without work but available for and seeking employment” and is from the World Bank.<sup>55</sup> A concern for these two variables is that they are measurements for an entire country and do not speak to relative measure between a “center of power” in a country and the less well off in relative or absolute

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<sup>54</sup> Bhavnani, Ravi, and Dan Miodownik. "Ethnic Polarization, Ethnic Salience, and Civil War." *Journal of Conflict Resolution* 53, no. 1 (2009): 30-49. Accessed October 30, 2015. <http://jcr.sagepub.com/content/53/1/30.full.pdf.html>, pp. 30

<sup>55</sup> Unemployment, total (% of total labor force) (modeled ILO estimate). (2014, December 31). Retrieved March 3, 2015, from <http://data.worldbank.org/indicator/SL.UEM.TOTL.ZS>

terms. Moreover, they are not measurements specifically for the ethnic groups identified within the EPR 3.0 dataset so empirically that may leave error for significant discrepancies.

Theoretically these socioeconomic variables are measures of relative deprivation theory, but I cannot find such measures so the next best option is to use country-wide measurements of variables and use other tools such as a variable interaction between excluded ethnic groups and the two socioeconomic measures to make them relative measures and also control for other factors.

### Controls

I control for a range of variables that were used in the aforementioned literature and that are theoretically appropriate for my regression. A variable for government type and democracy is POLCOMP from the POLITY IV data which is an average of the regulation of participation PARREG and the competitiveness of participation PARCOMP measures democratic participation.<sup>56</sup> I include this variable as a proxy for political participation and democracy in a country. These controls may be negatively correlated with the dependent variable because if members of a population lack representation, they are more likely to resort to violent means to make the government to change policy. Socioeconomic factors to control for include measures of poverty or lack of development including the Human Development Index and Gini coefficient. I chose these two measures to control for overall development and income inequality in a country. Demographic variables include country population and ethnic fractionalization. I chose these measures to control for the size of population and also ethnic diversity in a country. Conditional variables within countries for which I am controlling include the percent of mountainous terrain in a country, whether or not there was a regime change within the past three

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<sup>56</sup> Marshall, M., Gurr, T., & Jaggers, K. (2014, May 6). Polity IV Project. Retrieved April 3, 2015, from <http://www.systemicpeace.org/inscr/p4manualv2013.pdf>. pp. 25-26, 29

years for a country, and the percent of years a country was under colonial or imperial rule from 1816 to COW independence. I chose the percent of mountainous terrain in a country because such terrain may be conducive to asymmetrical warfare if an excluded ethnic group wants to launch violence against the government. I included regime change because transition from one regime to another may bring instability which may promote conflict. I included previous colonial or imperial rule because countries with this type of history may have had their form of government or distribution of power dictated by the colonial or imperial power and many times this creates an imbalance of power between ethnic groups which may foster conflict. I applied a logarithmic transformation to the population variable after observing a skewed distribution in the original data and the percent of mountainous terrain in a country was already a logged variable in the original data I found. As aforementioned, by using panel regression for observations over a ten year span it allows me to control for time-specific irregularities that may deviate from the general trend of data.

## RESEARCH DESIGN

### Unit of Analysis

The unit of analysis of this study is country-year and I am using panel data for years 2001-2010 for 150 countries. I am using country-year as the unit for analysis because theoretically I am trying to measure internal armed conflict within countries while controlling for factors outside of a state's sovereignty. Other studies have focused on transnational terrorism, but they do necessarily not speak to the potential for factors within countries that may engender internal or "home grown" armed conflict. The reason I am using a panel of observations over a ten year range is because if I draw a sample from only one year it is not valid unless I am making a theoretical argument only that specific year. By analyzing ten years of data I will be able to observe trends over time and in a sense this is controlling for time because its allows me to see if there are significant outliers and either discard them or identify them as exceptional. Another possibility for the panel is to employ a time series method for the ten year span for each country. Doing so would facilitate analysis of each country over time in terms of its propensity for internal armed conflict and if the independent variables and possibly control variables serve as factors. Furthermore, such an analysis would possibly lead into a historical case study of prominent countries in the sample, examining the historical influences for the specific countries and how they reflect the time series data trends.

### Method

Since my dependent variable is dichotomous, I am going to use logistic regression with random effects to test my independent variables alongside the control variables against the dependent variable. I am running three separate models that correspond with the "hypotheses"

section above. The first model that tests H1 will include each independent variable and the interactions between excluded ethnic population and each of the two socioeconomic variables. The second model that tests H2 will include excluded ethnic population. The third model that tests H3 will include GDP per capita and unemployment. Each of the models will include all eight aforementioned control variables.

## RESULTS AND ANALYSIS

Below, in Table 1, I included the results for each of the three models. The variables are on the left margin, the label to distinguish each model and corresponding hypothesis is overhead, and at the cross sections are parameter estimates with p-values for corresponding z-scores in parentheses.

Table 1. Study Statistics

Internal Armed Conflict	Hypothesis 1,	Hypothesis 2	Hypothesis 3
Number of Observations	1089	1105	1089
Wald Chi-square, P-value	20.31 (0.085)	20.13 (0.004)	24.17 (0.004)
Excluded Population	3.006 (0.536)	5.210 (0.050)**	
Log GDP Per Capita	-1.684 (0.060)*		-0.910 (0.167)
Log Unemployment	-0.809 (0.400)		-1.202 (0.085)*
Excluded Population and Log GDP Per Capita	4.185 (0.109)		
Excluded Population and Log Unemployment	-1.487 (0.588)		
Gini Coefficient	-0.011 (0.830)	-0.017 (0.712)	-0.018 (0.722)
Political Competition	-0.003 (0.982)	-0.057 (0.674)	-0.034 (0.812)
HDI	4.427 (0.215)	1.047 (0.706)	4.207 (0.239)
Ethnic Fractionalization	7.443 (0.005)**	8.181 (0.001)**	7.922 (0.001)**
Log Population	1.759 (0.000)***	1.683 (0.000)***	1.789 (0.000)***
Log Mountainous Terrain	0.735 (0.115)	0.628 (0.155)	0.925 (0.052)*

Regime Change in Past 3 years	0.099 (0.835)	0.122 (0.795)	0.049 (0.917)
Percent of Years Under Colonial or Imperial Rule	4.900 (0.032)**	4.016 (0.042)**	5.218 (0.019)**

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\*p ≤ .10; \*\*p ≤ .05; \*\*\*p ≤ .0005; p values in parentheses

Based on these results I fail to reject the null hypothesis for H1, reject the null hypothesis and the second alternative hypothesis in favor of the first alternative hypothesis for H2 and fail to reject the null hypothesis for H3. For H1 none of the independent variables or their interactions were significant, in H2 excluded ethnic population was significant with a positive coefficient at a significance level of 0.05, and in H3 none of the independent variables were significant at a significance level of 0.05 but log unemployment was significant at a level of 0.10. However the convention for p-values is a 0.05 threshold so based on that I still fail to reject the null hypothesis for H3. Several control variables including ethnic fractionalization, log population, and percent of years under colonial or imperial rule were significant across all three models. Only models for H2 and H3 are significant overall as evidence by high Wald chi-square values with corresponding p-values under the alpha level of 0.05. The model for H3 is nearly significant based on the p-value of 0.085, which is only slightly above the alpha level. My only significant model for the independent variable of interest was H2 for excluded ethnic population, so for that variable I created a line graph with Lowess modification to smooth out the line.



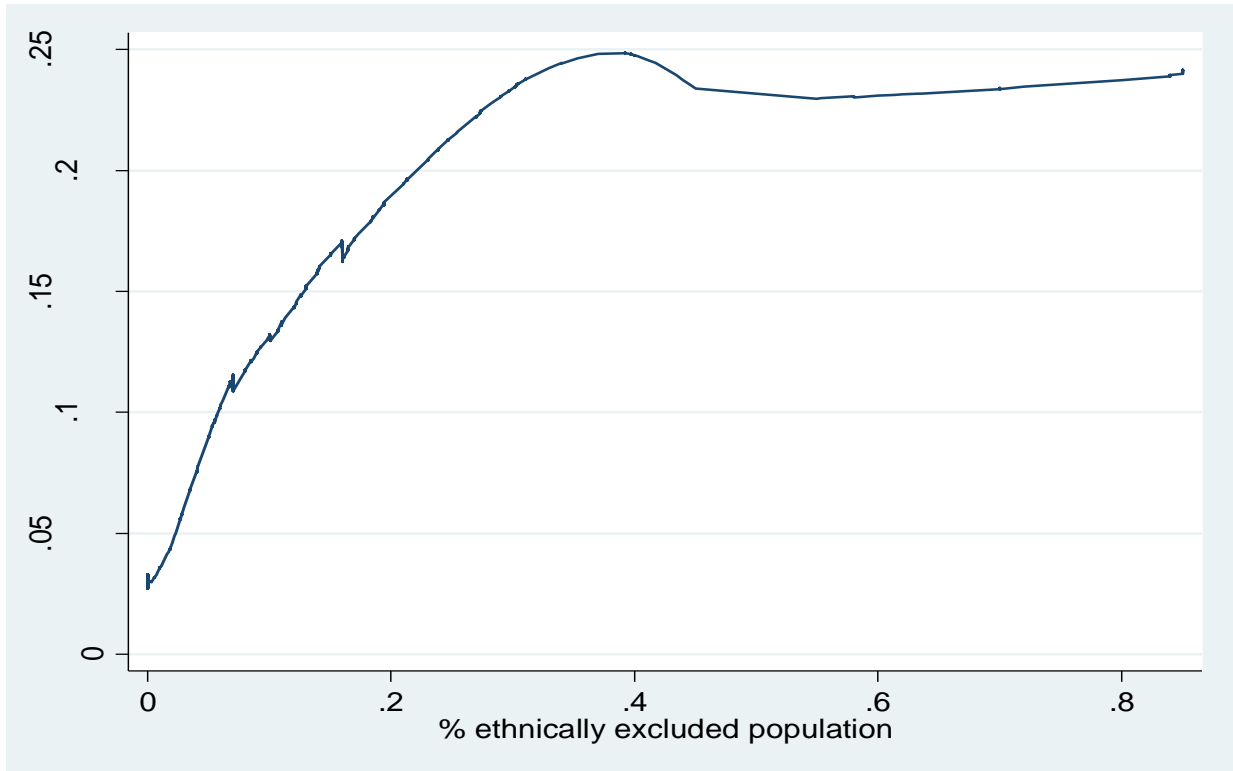


Figure 1. Bivariate Lowess plot

According to this graph, as the percent of excluded ethnic groups in a population of a country increases, so does the probability of that country experiencing internal armed conflict. It appears that the peak of this curve relationship is about 39 percent and this corresponds to almost a 25 percent probability that a country experiences internal armed conflict- after that point the curve slopes down and then levels off in a slightly positive relationship.

For the primary models I included two principal component analyses with separate sets of variables based on two themes: socioeconomic variables and country conditional variables. The socioeconomic variables include Gini Coefficient, HDI, log GDP per capita, and log unemployment. For this battery of variables HDI and log GDP per capita explain the most variance, 63.14 percent and 62.69 percent respectively, in the first component which accounts for 56.28 percent of the total variance. The second component has a high loading for log

unemployment at 94.23 percent of the variation. Thus the first component is based around GDP per capita and HDI and the second is based around unemployment. The first two components account for 81.58 percent of the total variance and the third component only adds 16.40 percent to the cumulative amount, so I decided to only keep the first two components. The country conditional variables mostly capture traits inherent in the country including political competition, log population, log percent of mountainous terrain, regime change within the past three years, and percent of years under colonial or imperial rule. For this battery of conditional variables log population and log percent of mountainous terrain explain the most variance, 61.11 percent and 61.39 percent respectively, in the first component. Unlike the socioeconomic battery of variables, there is more of an even spread among the components in terms of the proportion of variance explained for the country conditional variables. The first component explains 28.21 percent of the variance, the second component explains 23.08 percent of the variance, and the third component explains 20.25 percent of the variance, and these three add cumulatively to 71.54 percent of the variance explained. The fourth component adds only 15.16 percent to the cumulative variance explained and so I decided to retain only the first three components. The second component has a high loading for political competition at -81.03 percent of the variance and the third component has a high loading for regime change within the past three years at 96.86 percent of the variance. Thus for this battery of variables, the first component has high loadings for population and mountainous terrain, the second component has a high loading for political competition, and the third component has a high loading for regime change.

As for other variations of the models, I tested HDI as the independent variable for socioeconomic desperation and civil war and terrorism as the dependent variable, all in separate models. For the models with HDI as the independent variable for socioeconomic desperation,

there is no difference compared to the original models above in terms of which variables are significant based on the alpha level of 0.05. In the comparison of civil war and terrorism as two different dependent variables, there actually are some big differences in which variables were significant. For H1 with the civil war model variables including excluded population and political competition are significant while with the terrorism model variables including excluded population interacted with GDP per capita political competition, ethnic fractionalization, log population, percent of mountainous terrain, and percent of years under colonial or imperial rule were significant. For H2 with the civil war model variables including excluded population, political competition, and HDI are significant while with the terrorism model variables including excluded population, political competition, ethnic fractionalization, log population, percent of mountainous terrain, and percent of years under colonial or imperial rule are significant. For H3 with the civil war model none of the variables were significant while with the terrorism model political competition, ethnic fractionalization, log population, percent of mountainous terrain, and percent of years under colonial or imperial rule are significant. Given the differences in the models between civil war and terrorism, it may be reasonable to treat them as separate concepts instead of aggregating the two into internal armed conflict.

The implications of my hypotheses about aforementioned theories is that countries with ethnic groups that are excluded from political power are more likely to experience internal armed conflict, but if those ethnic groups also face relative deprivation from socioeconomic pressures they are not. Also, socioeconomic pressures such as low per capita income and unemployment alone are not significant predictors for whether or not a country experiences internal armed conflict. These results run contrary to Ted Gurr's theory of relative deprivation interacted with Andreas Wimmer, Brian Min and Lars-Erik Cederman's theory of "ethnopolitical configurations

of power” because if an excluded ethnic group that is socioeconomically worse off than the rest of the population that does not necessarily mean the asymmetrical power dynamic will engender internal armed conflict. But the results do lend credence to Wimmer, Min and Cederman’s theory without the incorporation of relative socioeconomic variables. The results also, if only tangentially, reinforce Atin Basuchoudhary and William Shughart II’s theory that ethnic tension over “competition or access to economic resources or political power may trigger conflicts between different ethnic groups as they jockey for position” because ethnic power relations factor in political power.<sup>57</sup> However, my results for the second hypothesis are inconsistent with James Fearon and David Laitin’s conclusion that ethnic fractionalization is not a significant predictor for civil war in a country; although they measured fractionalization and I measured exclusion. The former is a measure of diversity while the latter is a relative measure of the distribution of political power between two or more ethnic groups. An unexpected result was that ethnic fractionalization as a control variable in all three of my models proved to be significant and this also runs contrary to Fearon and Laitin’s study.

Hypothesis three was a test of theories about the relationship between socioeconomic development factors including GDP per capita and unemployment and internal armed conflict. The insignificant results for GDP per capita found in my study are consistent with Alberto Abadie and Kevin Goldstein’s conclusion that it is not a significant predictor for terrorism risk for a country. However, contrary to Goldstein’s finding that unemployment is a significant predictor variable, I found it to be insignificant in my model. My model is also consistent with James Piazza’s study that found HDI (which includes GDP per capita) and unemployment do not significant correlate with increased levels of terrorism. The finding that population was

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<sup>57</sup> Basuchoudhary and Shughart, pp. 71

significant in all three models is consistent with Fearon and Laitin's finding that it is a significant predictor of civil wars, but population is not necessarily a socioeconomic factor.

## CONCLUSION

In this study I tested the application of relative deprivation theory to excluded ethnic groups via proxy variables as causes for internal armed conflict. When I tested for each component separately using proxy variables I tested ethnic exclusion and socioeconomic desperation as possible causes for internal armed conflict. I found that the second hypothesis which posits that countries with increasing amounts of ethnic groups excluded from power in a country are more likely to experience internal armed conflict proved significant. However my other two hypotheses that increasing amounts of excluded ethnic groups that are relatively socioeconomically worse off and increasing amounts of socioeconomic pressure in general for countries are more likely to endanger internal armed conflict proved insignificant. These results run contrary to many previous scholars' results while reinforcing some others, and this indicates that further testing of the hypotheses discussed herein is needed. The implications of these results is that countries that want to decrease the potential for internal armed conflict in their country should try to be more inclusive of excluded ethnic groups and give them more political power in order to offset an asymmetrical power dynamic between ethnic groups. Attempting to improve socioeconomic conditions such as household income and employment may not be effective measures for reducing internal armed conflict. International bodies such as foreign donors, international organizations and non-governmental organizations may want to promote a more equitable distribution of political power among ethnic groups in conflict-ridden or conflict-prone countries rather than attempt to improve socioeconomic conditions if they wish to reduce internal armed conflict in those countries and should adjust their aid strategies accordingly.

The implications for the significant control variables in each of the models may be less applicable to policy because there is not a lot a country or international body can do to affect a

country's ethnic diversity, population, or imperial or colonial past. However, what a country may do is change their governing system to accommodate for an ethnically diverse population by sharing political power more equitably and guaranteeing minority ethnic groups political rights and representation such as veto power and seats in governing bodies such as parliament.

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## APPENDIX A. DATA SUMMARIES

Table 2. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
yliac	1497	.1289245	.3352284	0	1
xlexclpop	1496	.1381763	.1890158	0	.85
lnx21gdppcap	1474	1.570973	1.338859	-1.705173	4.187819
lnx22unemp	1473	1.943541	.7093689	-1.609438	4.706824
xlexclpop~ap	1473	.1651549	.3098249	-1.061037	1.434147
xlexclpop~mp	1472	.2506999	.3826445	-.4290935	2.338529
GiniCoeffi~t	1184	38.45558	8.702764	19.78291	68.90324
polcompPol~V	1415	6.999293	3.023131	1	10
HDI	1430	.6798357	.1830645	.273	.971
ethfrac	1497	.4079067	.2793435	.001	.9250348
lnPopulation	1453	16.37626	1.375348	13.33239	21.01422
lmtest	1497	2.15672	1.411774	0	4.421247
regchg3	1497	.0761523	.2653303	0	1
pci	1497	.4707928	.2863683	0	1

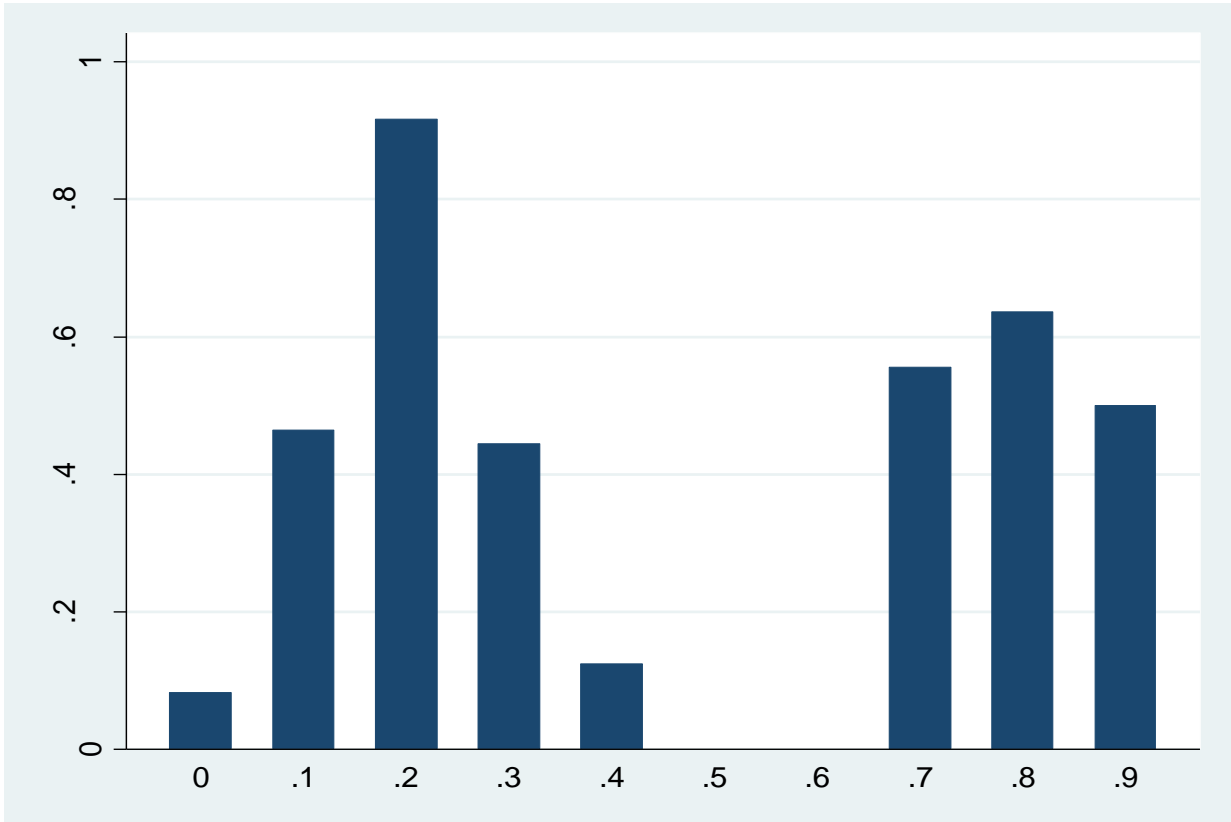


Figure 2. H1 Residuals

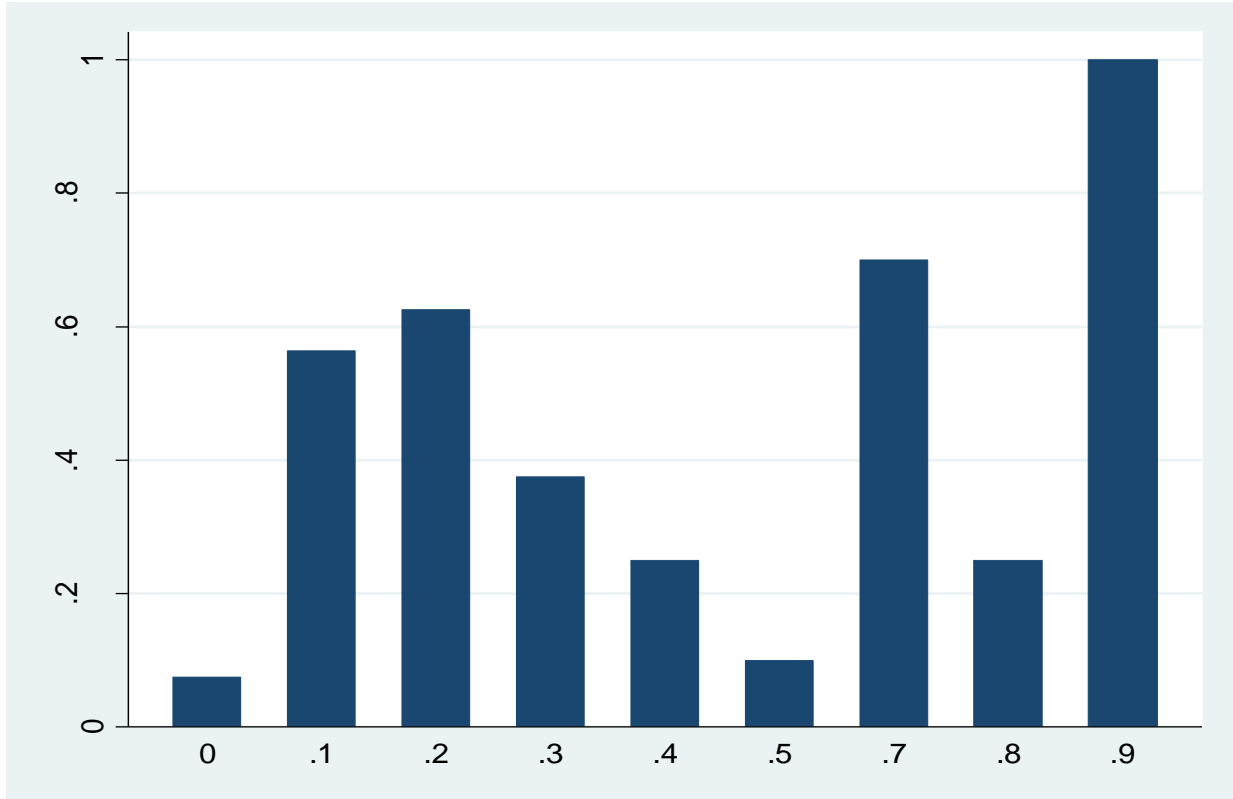


Figure 3. H2 Residuals

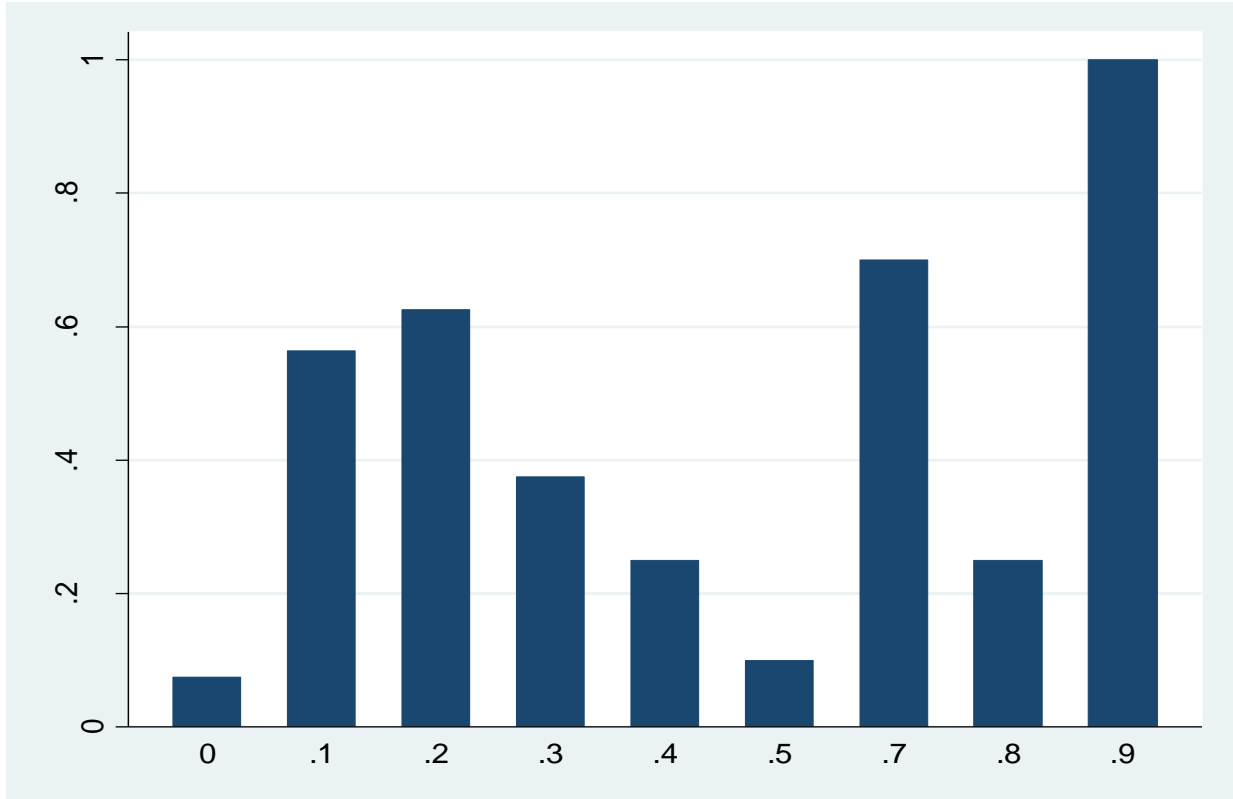


Figure 4. H3 Residuals

## APPENDIX B. RAW TEST RESULTS

Table 3. H1 Results

```

Random-effects logistic regression      Number of obs      =      1089
Group variable: country2              Number of groups   =      128

Random effects u_i ~ Gaussian          Obs per group: min =      1
                                         avg =      8.5
                                         max =      10

Integration method: mvaghermite        Integration points =      12

                                         Wald chi2(13)     =      20.41
Log likelihood = -175.22108            Prob > chi2       =      0.0854

```

yliac	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
xlexclpop	3.006337	4.852695	0.62	0.536	-6.504771	12.51744
lnx21gdppcap	-1.68375	.8941133	-1.88	0.060	-3.43618	.06868
lnx22unemp	-.8089668	.9620328	-0.84	0.400	-2.694517	1.076583
xlexclpop_lnx21gdppcap	4.185243	2.612278	1.60	0.109	-.9347277	9.305214
xlexclpop_lnx22unemp	-1.487097	2.745563	-0.54	0.588	-6.868302	3.894107
GiniCoefficient	-.0108485	.0504228	-0.22	0.830	-.1096754	.0879784
polcompPolityIV	-.0032794	.1435713	-0.02	0.982	-.284674	.2781153
HDI	4.426526	3.572557	1.24	0.215	-2.575556	11.42861
ethfrac	7.44301	2.66763	2.79	0.005	2.214551	12.67147
lnPopulation	1.759171	.4730693	3.72	0.000	.8319721	2.68637
lmtest	.7352234	.4664444	1.58	0.115	-.1789909	1.649438
regchg3	.0988536	.4736272	0.21	0.835	-.8294387	1.027146
pci	4.897016	2.279619	2.15	0.032	.429045	9.364987
_cons	-42.88277	9.801776	-4.37	0.000	-62.09389	-23.67164
/lnsig2u	3.016268	.3960926			2.239941	3.792596
sigma_u	4.518293	.8948313			3.064764	6.661188
rho	.8612153	.0473424			.7406008	.930974

Likelihood-ratio test of rho=0: chibar2(01) = 244.37 Prob >= chibar2 = 0.000

Table 4. H2 Results

```

Random-effects logistic regression      Number of obs      =      1105
Group variable: country2              Number of groups   =      130

Random effects u_i ~ Gaussian         Obs per group: min =      1
                                       avg =      8.5
                                       max =      10

Integration method: mvaghermite       Integration points =      12

                                       Wald chi2(9)      =      24.17
Log likelihood = -178.67761           Prob > chi2       =      0.0040

```

yliaac	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
xlexclpop	5.210412	2.656448	1.96	0.050	.0038702	10.41695
GiniCoefficient	-.0170782	.0462034	-0.37	0.712	-.1076351	.0734787
polcompPolityIV	-.0566776	.1347248	-0.42	0.674	-.3207334	.2073782
HDI	1.046992	2.77655	0.38	0.706	-4.394947	6.48893
ethfrac	8.18144	2.575835	3.18	0.001	3.132896	13.22998
lnPopulation	1.682762	.4458567	3.77	0.000	.8088993	2.556626
lmtest	.627633	.441489	1.42	0.155	-.2376695	1.492936
regchg3	.1219394	.470112	0.26	0.795	-.7994632	1.043342
pci	4.016066	1.979137	2.03	0.042	.1370283	7.895104
_cons	-41.87617	9.18875	-4.56	0.000	-59.88579	-23.86656
/lnsig2u	2.928029	.3396912			2.262247	3.593812
sigma_u	4.323281	.7342902			3.099136	6.030958
rho	.8503287	.0432324			.7448629	.9170531

Likelihood-ratio test of rho=0: chibar2(01) = 257.03 Prob >= chibar2 = 0.000

Table 5. H3 Results

```

Random-effects logistic regression      Number of obs      =      1089
Group variable: country2              Number of groups   =      128

Random effects u_i ~ Gaussian          Obs per group: min =      1
                                       avg =      8.5
                                       max =      10

Integration method: mvaghermite        Integration points  =      12

                                       Wald chi2(10)     =      26.13
Log likelihood = -177.5455             Prob > chi2       =      0.0036

```

yliac	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lnx21gdppcap	-.9095761	.6575116	-1.38	0.167	-2.198275	.3791228
lnx22unemp	-1.202374	.6983092	-1.72	0.085	-2.571035	.1662872
GiniCoefficient	-.0176555	.0495392	-0.36	0.722	-.1147506	.0794396
polcompPolityIV	-.0340678	.1434965	-0.24	0.812	-.3153158	.2471803
HDI	4.206968	3.575611	1.18	0.239	-2.8011	11.21504
ethfrac	7.922482	2.423137	3.27	0.001	3.173222	12.67174
lnPopulation	1.788712	.4609702	3.88	0.000	.8852269	2.692197
lmtest	.9253072	.4760673	1.94	0.052	-.0077675	1.858382
regchg3	.0492639	.4748171	0.10	0.917	-.8813605	.9798883
pai	5.218455	2.228466	2.34	0.019	.8507428	9.586167
_cons	-43.1434	9.202566	-4.69	0.000	-61.1801	-25.10671
/lnsig2u	3.187281	.3239146			2.55242	3.822142
sigma_u	4.921633	.7970945			3.583034	6.760325
rho	.8804221	.0341014			.7960152	.9328487

Likelihood-ratio test of rho=0: chibar2(01) = 270.84 Prob >= chibar2 = 0.000