

Killing the Protectors: Macro Determinants of Environmental Activist Killings

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Abstract

What countries are most dangerous for environmental activists? In many countries around the world advocating on behalf of the environment, which also usually means advocating against the interests of major multinational corporations and governments, can be deadly. The NGO Global Witness has been documenting and publicizing the killing of environmental activists since 2002 and reports that in 2017 alone there were almost 200 environmental activists killed. Using the data published by Global Witness this paper examines the macro level determinants of environmental activist killings with attention given to the political and environmental factors that contribute to the creation of deadly environs for environmental activists. We find that regime type is a significant determinant of environmental activist killing with democracies being more dangerous than authoritarian regimes, although moderately wealth democracies are deadlier than either poor democracies or wealth democracies. Additionally, countries with more corruption, more human rights abuses, and higher levels of deforestation also have more environmental activist killings. The openness afforded to activists by democracies gives them space to protest environmental problems, however in countries with more corruption, poor human rights records, and higher levels of deforestation this situation can increase their vulnerability to violence.

Introduction

“When I got there, the place was covered in empty bullet shells, and it made me think: all these indigenous people ever wanted was to be able to reclaim their ancestral lands and live in peace”

The above quote is from environmental activist Rene Pamplona who is describing the scene after the murder of eight indigenous people near the municipality of Lake Sebu in the Mindanao island of the Philippines. The attack was carried out by the Filipino military. Their justification was that it was in retaliation against the New People’s Army (NPA) who they alleged shot at soldiers patrolling the area. However, no members of the NPA were among those killed instead among the dead were Datu Victor Danyan and four of his family members. Datu Victor Danyan was an outspoken opponent of the Silvicultural Industries Coffee Plantation expansion of 300 hectares into the ancestral homeland of the Taboli-manubo people of Mindanao. Anonymous sources for the NGO Global Witness stated that the Special Civilian Armed Auxiliary (SCAA), an auxiliary army unit that provides security for Silvicultural Industries, might also have been involved and possibly told the military that the NPA was operating in the area in the hopes of inciting violence against the opponents of the plantation expansion. This story is described in a recent report on environmental activist killings produced by the NGO Global Witness (2018). The report entitled *At What Cost?* states that in 2017, 207 land and environmental defenders were murdered 48 of whom, including Datu Victor Danyan and his family, were murdered in the Philippines which had the second highest murder rate of environmental and land defenders in 2017 (Brazil had the highest number with 57).

The story of Datu Victor Danyan is, according to Global Witness, becoming all too familiar as 2017 had the highest murder rate for environmental and land defenders since they began tracking the phenomenon in 2002. The Philippines is a lower middle-income country that

has experienced robust GDP growth over the last few years. It is also a democracy, but one with a large amount of corruption and vulnerabilities to strongman leadership as displayed by the current President Rodrigo Duterte. Additionally, the Philippines is ranked 82nd out of 180 countries in the Environmental Performance Index (EPI). All of these factors indicate that the Philippines is a country in the middle in terms of economic performance, political regime, and environmental protection, but it is also the country with the second highest rate of environmental activists murdered in 2017. What this paper seeks to answer is how these factors are related. In other words, this paper explores the macro level determinants of environmental activist killings. Are environmental activists more vulnerable to violence in authoritarian states, fully democratic states, or states somewhere in the middle? Are they more vulnerable in poor, middle income, or wealthy states? Are they more vulnerable in states that are experiencing more environmental degradation or less? We utilize the Global Witness reports documenting environmental and land defender murders from 2002 to 2016. We find that the more democratic a state is the more likely that state will have an environmental activist murder. Importantly, this finding is contextualized in that the worse the human rights performance of the country, the more corrupt a country is, and countries with a yearly increase in the deforestation rate are also more likely to have an environmental activist murder. We also find that countries that are in the middle in terms of GDP per capita and are also democracies have higher rates of environmental activist killings than poor democracies or wealthy democracies. Interestingly, countries that are more reliant on mining for economic development were not more likely to have an environmental activist murder. These questions are important to understand as climate change leads to further environmental destabilization around the world this will likely lead to great confrontations between environmental activists on one hand and business and government actors on the other, therefore

it is important to understand what type of macro level factors provide more protection for environment activists than others. The rest of the paper will review the literature on regime type and political repression and environmental conflicts. describe the hypotheses tested, the research design utilized, and the data sources for this study. This will be followed by the results and then the conclusion.

Regime Type and Political Repression

There is a large literature on the macro determinants of political repression (e.g. Rummel 1994; Poe, Tate, & Keith 1999; Davenport 2004; Davenport 2007a; Davenport 2007b; Hill & Jones 2014; Jones & Lupu 2018; Cole 2018). Some of the key takeaways from this literature is that regime type and the presence of civil war carry the greatest explanatory power for why repression happens in some states and not others (Hill Jr., & Jones 2014). In terms of regime type the literature is clear – democracies are less repressive than non-democracies. There is of course a bit more nuance to these findings in that an increase in executive constraint seems to be the main element of democratic regimes that leads to lower repression among democracies (Davenport 2004; Hill & Jones). Additionally, participation and accountability (Bueno de Mesquita et. al.) are important factors in why democracies tend to have less repression as is respect for a free press (Whitten-Woodring 2009; Cole 2018). Finally, not all autocratic systems have the same level of repression as single-party states appear to be less repressive than military regimes or personalist regimes (Davenport 2007b).

There is also consideration in the literature as to what the threshold is for the pacific tendencies of democracies to take hold. This is the “is there more violence in the middle” question (Fein 1995; Regan & Henderson 2002; Davenport & Armstrong 2004; Jones & Lupu

2018). Regan and Henderson (2002) find that when controlling for the level of threat less developed countries with moderate levels of democracy tend to have the highest levels of political repression. Davenport and Armstrong (2004) argue that there is a threshold of democratic pacification and that below this threshold democracy does not have an impact on human rights violations but above the threshold it decreases human rights violations.

Conversely, Jones and Lupu (2018) do not find support for the “more violence in the middle” hypothesis with regards to political repression (there is more support for civil conflict and terrorism in the middle). They argue that many previous studies specify a functional form of the relationship between regime type and violence (whether civil war, repression or terrorism) – an inverted U. Their approach does not specify a functional form allowing them to capture more of the nuance in the relationship as opposed to, in their words, defining an “arbitrary middle.”

(Jones and Lupu 2018: 653)

More narrowly tailored research has highlighted the relationship between regime type and specific forms of repression. For example, Landman (2006) found that human rights defenders were less likely to experience repression in democracies. In contrast, the work by Asal et. al. (2018) on the relationship between regime type and the killing of journalists found that journalists were more vulnerable to killings in democracies. Previous work on the killing of journalists has highlighted how these killings are often a precursor to further systematic repression (Gohdes and Carey 2017) or an examination of the subnational determinants of journalist killings, specifically in Mexico (Brambila 2017). Asal et. al. (2018) however highlight the role of regime type on journalist killings which is useful for the present study since the danger faced by environmental activists is similar to the danger faced by journalists. This recent work highlighting the vulnerabilities faced by journalists can shed light on similar vulnerabilities

faced by environmental activists. Asal et. al. (2018) argue that, contrary to conventional wisdom, journalists operating in democracies are more vulnerable to violence. Their argument is that democratic countries make it easier for journalists to pursue stories, as opposed to authoritarian states which put heavy restrictions on what journalists can report on, and uncover corruption and criminal activities. However, this can leave them vulnerable to violent actors who wish to remain out of the spotlight, such as criminal gangs, and who may use violence against journalists in retaliation for the stories they cover (Asal et. al. 2018). Democracies also provide space for environmental activists to protest and engage in contentious politics against the state and private actors. In authoritarian states this level of political freedom is most likely not available to environmental activists. Moving from the relationship between regime type and repression the next section reviews the literature on the causes of environmental conflicts including the factors that leave environmental activists vulnerable to violence.

Environmental Conflicts

In general, the question of environmental degradation leading directly to violent conflict is an open one. According to Bernauer et. al (2012) rather than directly causing conflict environmental change, or degradation, leading to conflict is contingent on a variety of political and economic factors that influence the adaptive capacity of societies. Gadgil and Guha (2000), however, argue that the primary cause of environmental conflicts is driven by the modes of resource use. Modes of resource use, as they define it, is similar to the Marxian concept of modes of production but it has two additions – ideology and ecological impact. With this definition, they identify four types of resource production used throughout human history – gathering, nomadic pastoralism, settled cultivation, and industry. According to Gadgil and Guha

(2000) conflict can emerge across modes of resource use when one mode comes into contact with another as they are arranged around very different social and ecological principles.

Conflict, however, can also occur within modes of resource use. Gonzalez de Molina et. al. (2009) identify ten types of environmental conflicts: Disputes over access to water, defense of traditional water management systems, defense of common property, defense of common uses, woodland harvesting, territorial disputes, agricultural reform claims as distribution, protest against mining impacts/pollution, conflicts against environmental policies, and defense of indigenous territories (64). This does not constitute an exhaustive list but gives a sense of the variety of ways conflict can arrive over environmental issues.

In a similar vein, but more recently, the journal *Sustainability Science* had a special issue on causes of what they term ecological distribution conflicts (Temper et. al. 2018). The special issue presents the *Global Atlas of Environmental Justice* which catalogues cases of socio-environmental, or ecological distribution, conflicts around the world. These are defined as struggles over ecological distribution. An example would include the unequal exposure to pollution based on characteristics such as race, class, gender, etc. Ecological distribution conflicts often lead to contentious movements that aim to stop such unequal distributions and unsustainable resource use (Temper et. al. 2018). Since the focus of these contentious movements are often on powerful economic actors such as multinational corporations or local, regional, and national governments the potential for repressive violence is high. Many of the papers in the special issue focus on specific types of environmental conflicts such as the disruptions and backlashes caused by hydroelectric dams (Del Bene et. al. 2018), or on environmental conflicts in specific regions or countries (Johnson et. al. 2018). More generally, the article by Navas et. al. (2018) argues that environmental conflicts can have five types of

violence associated with them: direct, structural, cultural, slow, and ecological. In this analysis, we focus on direct violence in environmental conflicts, specifically the murder of environmental activists.

Research on violence against environmental activists has mostly focused on specific cases of activists who have been murdered such as Ken Saro-Wiwa in Nigeria (McLuckie and McPhail 2000) and Chico Mendes (Revkin 2004) among others, or on the local level determinants of violence using case studies (Knox 2017). John Knox the UN Special Rapporteur on the human rights obligation relating to the enjoyment of a safe, clean, healthy, and sustainable environment wrote a policy brief for the human rights organization *Universal Rights Group* which outlined the dangers that environmental activists face and what applicable international human rights laws apply to their situations (2017). He also highlights some of the causes of the repression faced by environmental activists such as the strong demand for natural resources, marginalization of indigenous communities and other minorities, and weak rule of law. Knox uses and builds on the pioneering work of the NGO *Global Witness* who has compiled the number of killings of environmental activists since 2002. Global Witness identifies some of the root causes of violence against environmental activists as “land disputes, state and corporate corruption, and impunity for crimes against activists.” (2017: 20).

Two new studies have looked at the determinants of violence against environmental activists using quantitative approaches. The first by Jeffords and Thompson (2016) uses the Global Witness environmentalists killing data and concludes that fatal crimes committed against environmental activists follows an inverted U shape or otherwise known as an environmental Kuznets curve. More specifically, what they argue is that as income per capita increases killing of environmental activists also increases but eventually as income per capita keeps increasing the

rate of killings begins to decline. They control for a host of factors that may influence the rate of killings of environmental activists including the overall murder rate in a country, the level of deforestation, the presence of the rule of law and level of corruption, and the percentage of national income that comes from resource rents. Middeldorp and Le Billon (2019) also use the Global Witness environmental activist killing data to analyze the determinants of environmental activist killings. They look at simple bivariate correlations between regime type in a country and rate of environmental activist murder and overall murder rate and rate of environmental activist murder. They find an inverted U shape relationship between regime type and the rate of environmental activist killings such that in countries that are partially democratic have the highest rate of environmental activist killings. Conversely, they find a linear relationship between the overall murder rate and the rate of environmental activist killings as countries with higher murder rates have more environmental activist killings (2019).

With the exception of Middeldorp and LeBillon (2019), who only look at the relationship between regime type and killings with bivariate correlations, none of these works consider the role that regime type plays in facilitating the killing of environmental activist killings. This is the primary issue that the present study takes up. The following section will outline the specific hypothesis we will test.

Hypotheses

The literature review shows that in general democracies are less repressive than non-democracies but the pacific elements of democracy are generally found in consolidated democracies.

Conversely, there are specific situations where specific groups of people, for example journalists, may be more vulnerable to repression in democracies compared to non-democracies. Assuming

environmental activists are in the same vulnerable situation journalists are in democracies we propose the following hypothesis to test:

H1: The more democratic a state the more likely the state will have an environmental activist killing

Of course, most democracies do not engage in retaliatory violence against environmental activists or journalists, and do not allow private actors to do so either, but those democracies with large amounts of corruption and higher levels of human rights abuses are the types of states where environmental activists maybe most vulnerable to violence. For environmental activists, as with journalists, the most dangerous places for them are democracies that allow them the space to protests but are also weak and/or corrupt enough in which a culture of impunity is created where retaliation against environmental activists by private and/or state actors is encouraged, or at the very least not prosecuted. With these factors in mind we propose the following two hypotheses:

H2: The more corrupt a state the more likely the state will have an environmental activist killing

H3: The worse a state's human rights record the more likely the state will have an environmental activist killing

Environmental activists would not engage in protest or contentious politics (whether in a democracy or autocracy) if some environmental problem had not spurred them to action in the

first place. Ultimately, Global Witness puts the primary root cause of environmental conflicts as “denying communities the right to take informed decisions about the use of their land and resources” (2017: 20). The culture of impunity addressed above obviously plays a role here as state and/or private actors are empowered to dislodge local communities and expropriate their resources without fear of punishment. First, however, these local communities need to have something to exploit. Most often this is land which contains some valuable commodity such as minerals for mining, or forests for logging. The more these points of conflict exist in a state therefore the more opportunities exist for conflict. Consequently, the final two hypothesis we test are:

H4: States with a decline in forest area will more likely have an environmental activist killing

H5: States with a greater reliance on mining for economic development will be more likely to have an environmental activist killing

Research Design

We test the above hypotheses using data on environmental activist killings gathered by the NGO Global Witness. Global Witness defines land and environmental defenders as “people taking peaceful action to protect land or environmental rights, whether in their own personal capacity or professionally.” (2018: 52). The dataset consists of observations from 2002-2016 and includes 193 countries.¹ Over that time a total of 1,408 environmental activists were killed

¹ Data from 2002-2013 comes from the 2014 Global Witness Report, “Deadly Environment.” All data after comes from subsequent yearly reports from Global Witness.

according to Global Witness. Following Asal et. al. (2018) we create a variety of measures for our dependent variable. The first variable (*EAKilled1*) is dichotomous with a 0 meaning there were no environmental activists killed in that country for that year and a score of 1 indicating that there were one or more environmental activists killed in that country for that year. A second dependent variable (*EAKilled2*) is ordinal with 0 meaning there were no environmental activists killed in that country for that year, a 1 indicates that one environmental activist killing happened in the country during that year, and 2 indicates that two or more environmental activist killings took place in that country during that year. The third measure of our dependent variable (*EAKilled3*) is another ordinal variable with 0 indicating that there were no environmental activists killed in that country for that year, a score of 1 indicating that one to nine environmental activist killings happened in that country for that year, and 2 indicating that 10 or more environmental activist killings occurred in that country during that year. Finally, the fourth measure of the dependent variable (*EAKilled4*) is simply the count of the number of environmental activists killed in each country per year. The variable ranges from 0 to 73 with most of the observations at zero. Because the vast majority of the countries in the dataset had zero environmental activist killings at all the use of multiple measures of the dependent variable can help to ensure the robustness of the findings.

The main independent variables are distributed into two categories: political and environmental. The political category includes measures of a country's regime type, human rights record, and level of corruption. *Regime* is a measure of a country's regime type ranging from an authoritarian state to a fully democratic state. We utilize the Center for Systemic Peace's PolityIV measure of regime type which ranges from -10, fully authoritarian states, to 10, a fully democratic state (2017a). To measure the human rights record (*Human Rights*) of each

state we utilize the Political Terror Scale (PTS) (Gibney et. al. 2017). The PTS is an ordinal measure of 1 to 5 and each level indicates an increase in repression on measures of physical integrity. To ease interpretation, we reversed the numbers so 5 indicates respect for measures of physical integrity while 1 indicates no respect for rights of physical integrity. We measure corruption (*Corruption*) using Transparency International's Corruption Perception Index (2017). The index ranges from 0-10 and higher scores indicate more corruption in a country.

For the environmental category, we include two variables: *Deforestation* and *Mining*. *Deforestation* is the change in the percentage of a country's landmass that is forested each year. This measure is used to indicate how many potential environmental flashpoints there are in a country where conflict may occur. *Mining* is the percentage of a country's exports that come from ores and metals. This variable is used to measure how important mining is to a state's economy with the implication that the more important it is the more opportunities there are for conflict between local groups and the state (or private businesses). Both of these measures come from the World Bank's World Development Indicator's list (2016). We also include four control variables. The first one is *MEPV* which stands for Major Episodes of Political Violence. This is a count variable that includes the major episodes of political violence that occur within a country each year (e.g. Civil War). The data is taken from the Center for Systemic Peace, Major Episodes of Political Violence list (2017b). The second control variable included is *Population*. This is a measure of a state's total population. The third control variable is *Homicide*, which is a measure of a country's rate of intentional homicides. The data comes from the United Nations Office on Drugs and Crime (2019). *Finally*, we include a measure of each state's GDP/per capita (*GDPpercap*). This variable is an ordinal variable where 1 represents the bottom third of the GDP per capita distribution in the dataset, 2 represents the middle third of the distribution, and 3

represents the upper third. The variable is constructed this way to account for the environmental Kuznets (or inverted U) curve identified by Jeffords and Thompson (2016) showing that as GDP per capita increases the level of environmental activist killings also increase but at some point, the killings begin to decrease as GDP per capita continues to rise. Both of these measures for *Population* and *GDPpercap* come from the World Bank's World Development Indicator's list and we take the natural log for each to account for outliers (2016).

Because the dependent variables are dichotomous, ordinal, and count we use logistic, ordered logistic, negative binomial regression, and zero inflated negative binomial regression model estimations. Additionally, since the killing of environmental activists is on the borderline for what constitutes a "rare event" (approximately 8% of country year observations include at least one environmental activist killing) we also utilize rare events logistic regression (King and Zeng 2001). The use of these specific models is in keeping with Asal et. al. (2018) and their analysis of the determinants of journalist killings. Finally, our models include year fixed effects and robust standard errors.

Results

Table 1 presents the results of seven models used to test our hypothesis. Model's 1, 2, and 3 use the dependent variable *EAKilling1* which is the dichotomous dependent variable of 1 if a country had at least one environmental activist killing that year and 0 if there were none. Model 1 is a regular logistic regression while model 2 is a rare events logistic regression. Model 3 also uses the *EAKilling1* dependent variable but uses a different measure of regime type. In an attempt to test the "more murder in the middle" thesis (Jones & Lupu 2018), model 3 uses an ordinal measure of regime type constructed from the Polity IV data. For this variable autocracy

is defined as those countries scoring between -10 and -4 on the Polity IV measure, anocracy is defined as those countries scoring between -3 and 3 on the Polity IV measure, and democracy is defined as those countries scoring between 4 and 10 on the Polity IV measure. Model 4 uses the dependent variable *EAKilling2* which is an ordinal variable of 0 for no environmental activist killings in a country for that year, 1 for one environmental activist killing in that country for that year, and 2 for two or more environmental activist killings in that country for that year. Model 5 uses the dependent variable *EAKilling3* which is also an ordinal variable where 0 is no environmental activists killed in that country for that year, 1 is 1-9 environmental activists killed in that country during that year, and 2 is 10 or more environmental activists in that country were killed during that year. Model's 4 and 5 are ordered logistic regressions. Finally, model's 6 and 7 use the *EAKilling4* dependent variable which is a count measure of the number of environmental activist killings each year per country. They are also a negative binomial regression and zero-inflated negative binomial regression respectively with *Population* used as the inflation factor since countries with more people are less likely to always have zero environmental activist killings.

Table 1 Here

There are several findings that are robust to all models. For instance, regime type is significant across all models showing that as the more democratic a country is the likelihood of an environmental activist killing increases. This is similar to the findings of Asal et. al. with regards to the killing of journalists (2018). Figure 1 also captures this result, as it displays the predicted probability of an environmental activist killing as regime type moves from autocracy to

democracy. Of particular note are the results for model 3 which use the ordinal measure of regime type. The results are significant and positive for the anocracy level showing that countries with regime types that are in the middle of autocracy and democracy also have a higher rate of environmental activist killings, but the results for the democracy level are also positive and significant and the coefficient is much larger indicating that the likelihood of an environmental activist killing is higher in democracies than in either autocracies or anocracies.

Figure 1 Here

Continuing with the political variables both *Human Rights* and *Corruption* are significant (with the exception of model 3 for *Human Rights*) and in the posited direction indicating that the worse a country's human rights record, and the more corrupt a country, the more likely that country will have an environmental activist killing. In terms of the environmental variables, *Deforestation* was significant and in the posited direction. The significance of these three variables provides some context for the finding that the more democratic a state the more likely that state is to have an environmental activist killing. Figures 2-4 show the predicted probability of an environmental activist killing for each of the three regime categories (autocracy, anocracy, and democracy) and each level of the variables *Human Rights*, *Corruption*, and *Deforestation*. In all three figures, we can see that the democracy category has the highest probability of having at least one environmental activist killing but that probability decreases as one moves from the lowest category on each of the three independent variables to the highest category. At the highest end of each of the three independent variables the difference in the probability of an environmental activist killing is indistinguishable across the three regime types. At the lowest

end of the three independent variables there is a large difference in the probability of an environmental activist killing across the three regime types with the probability increasing the highest for democratic states. However, the confidence intervals at these levels are very wide and overlapping indicating the uncertainty of the result. In the middle categories of the three independent variables the confidence intervals are smaller and the differences in the regime categories are more credible. For example, in Figure 3 democratic countries with a high to moderate amount of corruption (3, 4, 5 on the CPI) have a higher probability of having an environmental activist killing than autocracies or anocracies with the same level of corruption and here the confidence intervals are not overlapping. Additionally, those countries also have a higher probability of having an environmental activist killing than democracies with very low levels of corruption (8, 9, 10 on the CPI). Similar patterns present themselves for *Human Rights* and *Deforestation*.

Figure 2 Here

Figure 3 Here

Figure 4 Here

Interestingly the other environmental variable - *Mining* is not significant meaning that countries with more substantial mining operations (as measured by the percentage of ores and metals in a country's exports) are not more likely to have an environmental activist killing. This is somewhat surprising considering the environmental and social disruptions that can occur from mining operations (Bebbington et. al. 2008). On the other hand, as Christensen (2019) shows the likelihood of social and/or armed conflict over mining projects varies over the life of a mine. The reason for this he argues is incomplete information. He finds that it's not environmental degradation per se that leads to protests over mining but rather the fact that people have limited information about how profitable mines are but nevertheless they expect to gain from mining operations, and when these gains are not met that is when protests and violence can occur (Christensen 2019). Following this logic, it is not surprising that *Mining* is not significant in this analysis if mining operations do not necessarily lead to long and sustained protests then the likelihood of environmental activist killings would also be low.

In terms of the control variables used, all three – *Homicide*, *Population* and *GDPpercap* were positive and significant. Countries with higher murder rates also had higher rates of environmental activist killings and countries with larger populations also had more environmental activist killings than countries with smaller populations. The significance and direction of *GDPpercap* is in line with the results from Jeffords and Thompson (2016) in that the countries in the middle of the GDP per capita distribution with the most environmental activist killings. This is the environmental Kuznets curve they identified in their study (Jeffords and Thompson 2016). In light of these findings it is worth considering the relationship between GDP per capita and regime type and how that influences the likelihood of environmental activist killings. Figure 5 presents the predicted probabilities of environmental activist killings for each

level of regime type and for the lower, middle, and upper distribution of GDP per capita. The results show that middle range GDP per capita democracies have the highest probability of environmental activist killings, and poor and wealthy democracies have basically the same probability of having and environmental activist killing. These findings provide more context to the role regime type plays in environmental activist killing

Figure 5 Here

Conclusion

In conclusion, we find that democracies are more likely to have environmental activist killings than non-democracies. This is perhaps counterintuitive as democracies are less repressive than authoritarian states. However, just as Asal et. al. (2018) found with respect to the killing of journalists, democracies give space for journalists to pursue stories and activists to protest and engage in contentious politics. Both of which may leave them vulnerable to reprisal from private actors and/or government forces if the state in question, in addition to being a democracy, also having a culture of impunity that fails to punish violence actions is an important factor that leads to more violence against certain people such as journalists. Supporting this idea, we also found that states with higher levels of corruption and poor human rights records also have higher levels of environmental activist killings. These are actions (corruption and human rights abuses) that create a “culture of impunity” which leave environmental activists vulnerable to violence. Additionally, states with a yearly increase in the deforestation rate also have more environmental activist killings. Deforestation implies encroaching economic activity on local

populations many of whom may not welcome such activity and thus creating the climate for confrontation between activists and businesses and/or government actors.

Finally, we also found support for our control variables – homicide rates, population levels, and GDP per capita. Finding support for the significance of GDP per capita in explaining the level of environmental activist killings in a country lends credence to the similar findings of Jeffords and Thompson (2016). The finding that there is an inverse U-shaped relationship between GDP per capita and environmental activist killings also provides more context to our main finding of higher levels of environmental activist killings in democracies. More specifically, we find that middle range GDP per capita democracies have the highest level of environmental activist killings.

Further research in this area should continue to pursue the environmental factors that may lead to environmental activist killings. There is evidence to suggest that certain types of economic development projects with large environmental footprints lead to more local violence (Del Bene et. al. 2018). With climate change and continual environmental degradation around the world the likelihood of tension and conflict between local groups and the state or local groups and powerful economic interests will only continue to increase. Understanding the broad factors that lead to the killing of environmental activists are important steps to ensuring their protection. Also, future research should address systematically who is targeted for violence. Specifically, if indigenous people are more vulnerable or more likely to be targeted than non-indigenous? Research suggests that this may be the case as indigenous peoples tend to be more dependent on access to nature for their livelihoods which may make them more vulnerable to repressive violence (Lynch et. al. 2018) Finally, future research should address who is doing the killing? Is violence more often perpetrated by private actors or government actors? Of

particular interest, here maybe the “thugs for hire” phenomenon especially in democratic states. “Thugs for hire” are a form of privatized coercion used by state actors to repress a population and according to Ong (2018) they are used by state actors to evade responsibility. This would be an avenue that democratic states may use to suppress environmental activists since doing so openly would expose them to charges of hypocrisy and wider backlash. These and additional questions will help fill out the picture of who is most vulnerable to violence and hopefully lead to ways to minimize that violence.

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Tables and Figures

Table 1. Determinants of Environmental Activist Killings, 2002-2016

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Variable	EAKilled1	EAKilled1	EAKilled1	EAKilled2	EAKilled3	EAKilled4	EAKilled5
Regime	.246*** (.046)	.186*** (.038)		.255*** (.047)	.235*** (.041)	.322*** (.049)	.243*** (.038)
Anocracy			1.95* (.909)				
Democracy			3.25*** (.882)				
Human Rights	-.548* (.222)	-.495* (.197)	-.383 (.218)	-.573** (.212)	-.688** (.221)	-1.14*** (.201)	-1.99*** (.194)
Corruption	-.568*** (.142)	-.551*** (.110)	-.422*** (.130)	-.626*** (.136)	-.557*** (.128)	-.684*** (.162)	-.378** (.131)
Deforestation	-1.86*** (.500)	-1.67** (.541)	-1.78*** (.498)	-1.88*** (.532)	-1.64*** (.494)	-2.07*** (.460)	-1.15* (.490)
Mining	-.021 (.011)	-.003 (.011)	-.017 (.011)	-.018 (.012)	-.014 (.012)	-.008 (.009)	.017 (.011)
MEPV	-.148 (.090)	-.083 (.075)	-.090 (.087)	-.172 (.089)	-.221* (.090)	-.375*** (.088)	-.240** (.086)
Homicide Rate	.023** (.008)	.025*** (.007)	.025** (.008)	.023** (.008)	.031*** (.008)	.031*** (.008)	.030*** (.009)
(ln) Population	.979*** (.136)	.751*** (.099)	.957** (.137)	.992*** (.132)	.932*** (.119)	1.25*** (.121)	
(ln) GDPpercap		.223 (.140)					
(ln) GDPpercap (middle third)	1.56*** (.409)		1.69*** (.395)	1.69*** (.415)	1.36*** (.356)	1.78*** (.454)	1.98*** (.415)
(ln) GDPpercap (top third)	.018 (.598)		.123 (.570)	.334 (.579)	.418 (.550)	.296 (.716)	1.39* (.564)
Inflation - (ln)Population							-1.03*** (.135)
Cut 1				19.848 (2.78)	18.365 (2.43)		
Cut 2				20.521 (2.79)	20.412 (2.47)		
Ln Alpha						1.494 (.151)	.991 (.249)

Observations	1362	1352	1362	1362	1362	1362	1362
Wald Chi2(22)	173.65		175.88	191.63	224.83	409.36	523.82
Prob > Chi2	.0000		.0000	.0000	.0000	.0000	.0000
Pseudo R2	.4682		.4517	.4064	.4015	.2639	

*p < .05, **p < .01, ***p < .001. Robust standard errors included in parentheses. Yearly fixed effects included in models but results not presented.

Figure 1. Predictive Probabilities of Environmental Activist Killing by Regime Type

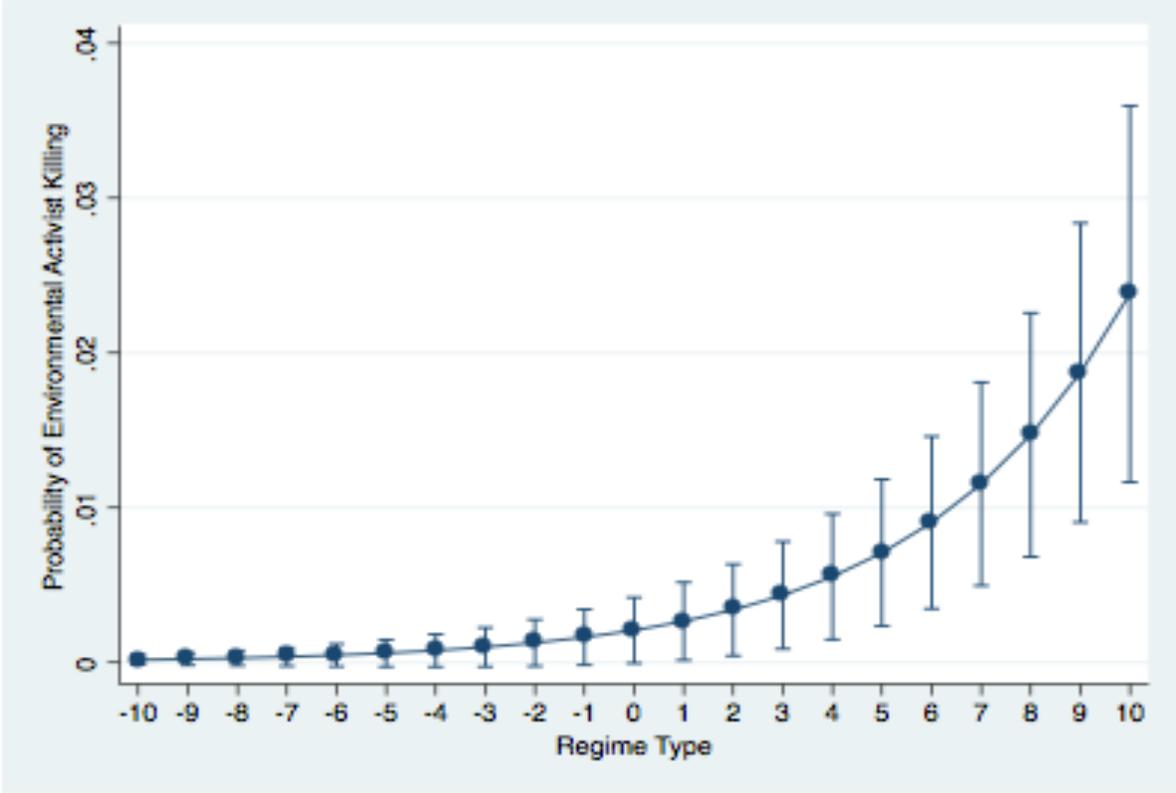


Figure 2. Predictive Probabilities of Environmental Activist Killing by Regime Type and Human Rights Record

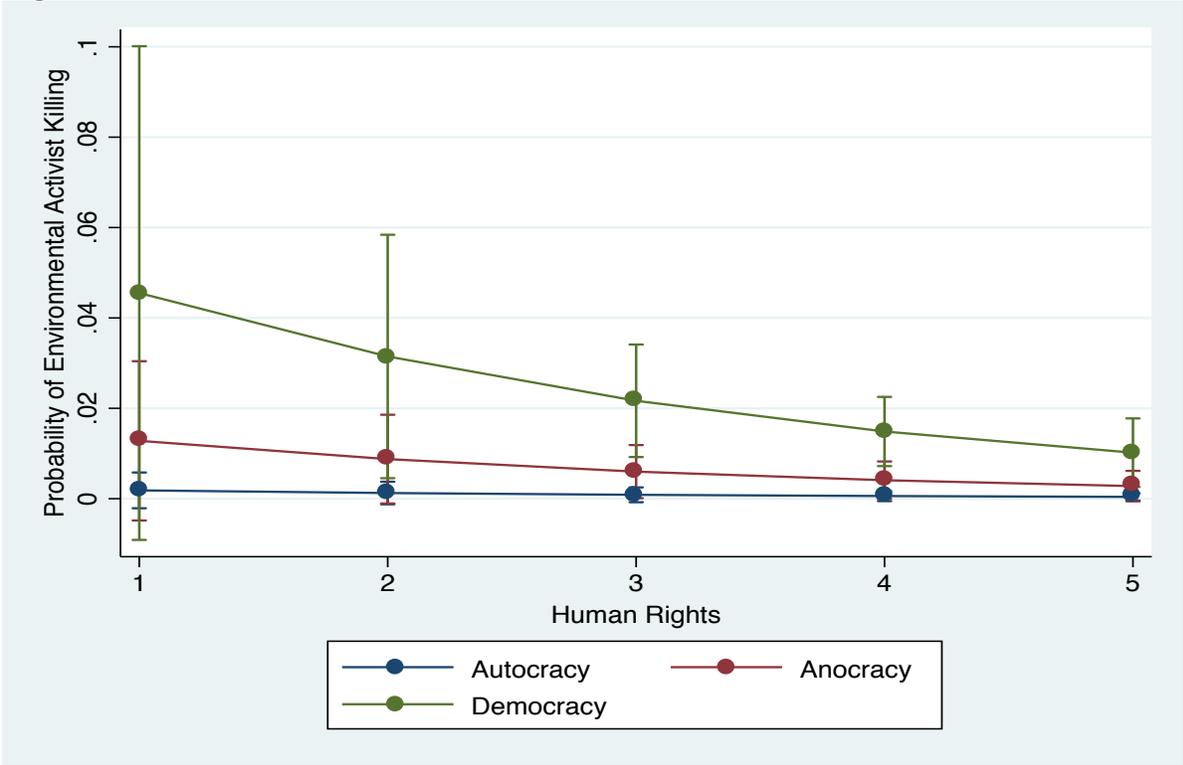


Figure 3. Predictive Probabilities of Environmental Activist Killing by Regime Type and Level of Corruption

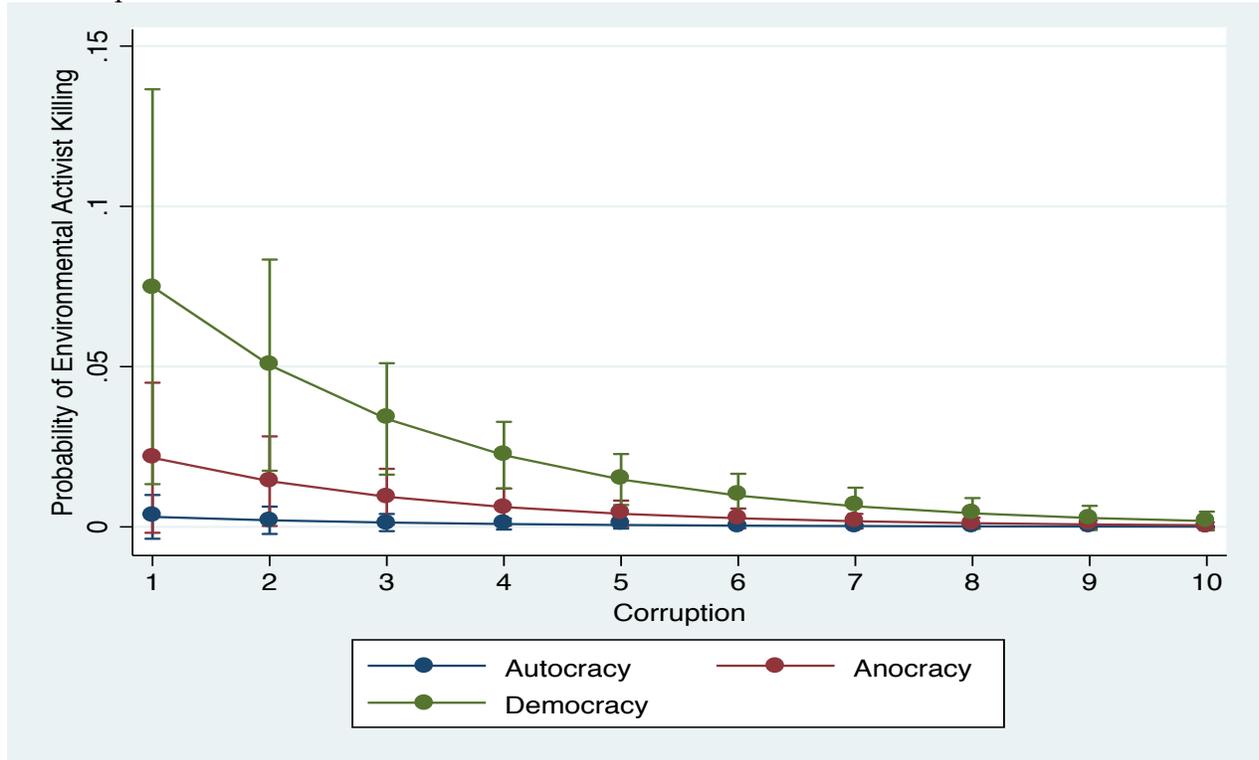


Figure 4. Predictive Probabilities of Environmental Activist Killing by Regime Type and Level of Deforestation

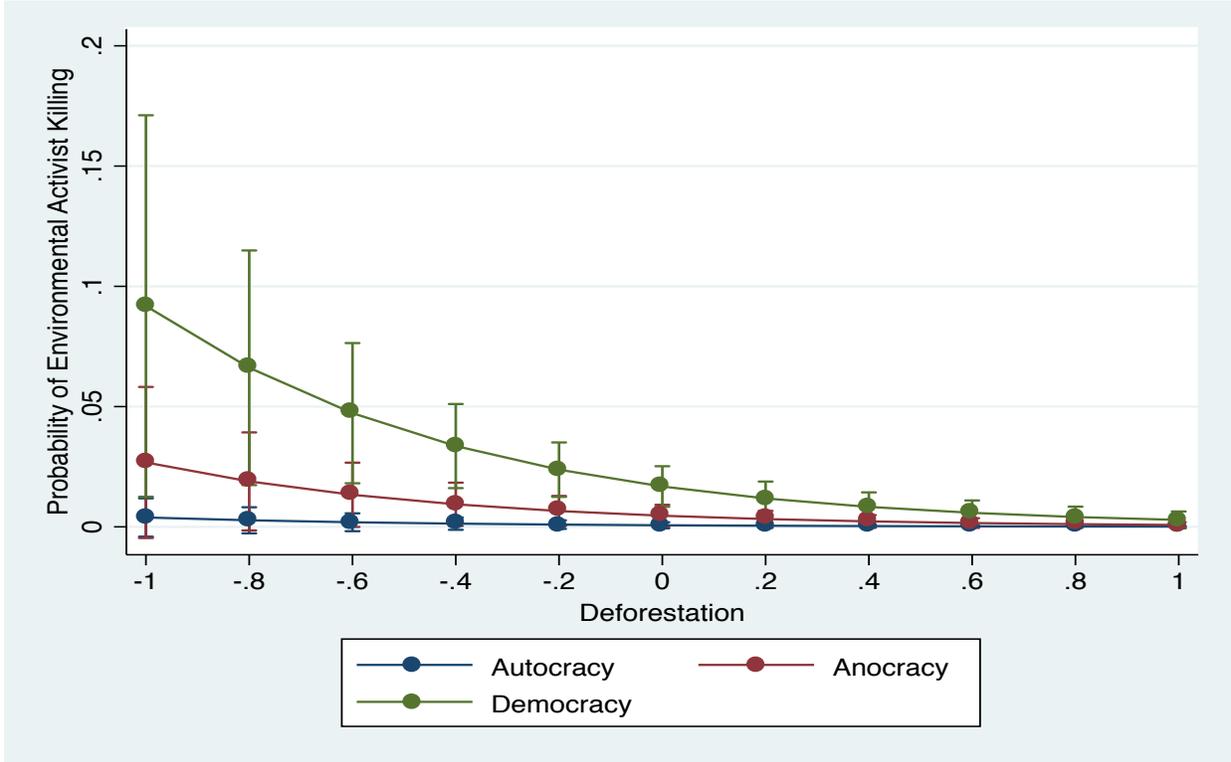


Figure 5. Predictive Probabilities of Environmental Activist Killing by GDP per capita level and Regime Type

