# COLONIALISM AND CIVIL WAR

## Connecting the colonial and postcolonial eras

DARTMOUTH

JAMES WEN

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NICHOLAS MILLER, Advisor

JEREMY FERWERDA, Advisor

Program in Quantitative Social Science

Dartmouth College

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# Abstract

What causes civil war? The study of civil war is full of conflicting research that argues for or against different variables that determine intra-state conflict. Such variables include GDP, natural resources, institutions, racial differences among many others. Since World War II, there have been many civil wars in new countries that gained independence after the war. This study attempts to find if there is a link between colonialism and post-colonial civil war and finds that extractive colonialism is correlated with increased odds of civil war while settler colonialism has no link.

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# Chapter 1

# Introduction

For much of the nineteenth and up until the middle of the twentieth century, Western colonialism dominated the world. Colonies became places in which European people could settle or places in which European governments could extract resources. After World War II, there was a period of mass decolonization which ushered in an era of nation building. Supranational organizations, policy makers, and academia turned to solving questions regarding what makes a successful nation state and what makes one stable post independence. With the creation of many new states came the occurrence of issues related to how state institutions handle discontent and the many issues their populations presented. Thus, the post-colonial era became a time period marked by violence in many forms including military coups, genocide, and civil war. This thesis will attempt to identify a relationship between what happened in the colonial era and post-colonial violence, specifically civil war.

*Research Question*

Did colonialism have an impact on the occurrence of post-colonial civil war? Specifically, the thesis compares extractive colonialism and settler colonialism. While civil war is only one form of post-colonial violence, the emergence of a violent intra-state war is a clear marker for the failure of a state to function. This study will also control for demographic and geographic variables that have already been extensively covered with respect to civil war studies.

# Chapter 2

# Literature Review

## 2.1 Demographic Diversity

Literature regarding post-colonial civil war, and violence in general, largely deals with demographics. One popular variable researchers have studied is ethnic diversity. Due to the plethora of studies covering ethnic conflict, there are many differing opinions on how important ethnic diversity is in determining civil war. On a fundamental level, researchers have theorized that ethnic conflict can occur since people within the same ethnic group live in close proximity and thus may share the same attitudes; when these attitudes conflict with those of a neighboring, separate ethnic group, conflict can emerge. Further, ethnic identities are less elastic than other types of identity. (Denny, Elaine, & Walter 2014) Certain academics have theorized that ethnic conflict existed in the pre-colonial era and that colonial powers served as a mediating force during colonization. However, when colonization ended, ethnic tensions were allowed to resume thus creating more opportunities for conflicts such as civil war. (Geiss 1991) Other researchers have added to this argument by theorizing that ethnic polarization increases chances of ethnic conflict rather than the number of ethnic groups. (Henderson, Errol, & Singer 2000) Some have explored this theory further by concluding that ethnic polarization increases the risk of civil war in autocracies while ethnic fractionalization

increases risk in democracies. (Schneider, Gerald, & Wiesehomeier 2008) These researchers conclude that in autocracies, the dominance of one group and the coercive power of the state limit chances for minorities to rebel while in democracies, violence serves as an alternative for small groups that would have no chance of obtaining meaningful policy making power. (Schneider, Gerald, & Wiesehomeier 2008) There is also research to suggest that neither ethnic diversity nor polarization are important. Rather, political exclusion and competition along ethnic lines breed conflict. (Cederman 2010) While many papers theorize that ethnic tensions have an effect on the occurrence of civil war, there are also a group of papers that argue otherwise. Certain researchers have argued that income matters more stating that at any level of ethnic diversity, the odds of civil war decrease as income measured in GDP increases while for any level of income, ethnic diversity does not have an effect. (Fearon & Laitin 2001) Collier and Hoeffler (2007) found that GDP growth rates pre-civil war are half of those of peaceful countries theorizing that in poorer countries, the opportunity cost to start a violent conflict is lower. However, with respect to income, there is quantitative research to suggest that poverty has no correlation with incidence of civil war. (Djankov, Simeon, & Reynal-Querol 2010) Besides income, other researchers argue that level of democracy, not ethnic diversity, affects risk of civil war more. (Lacina 2006)

With respect to religious fractionalization, there is slightly more consensus regarding its effect on civil war. Fearon and Laitin (2001) found that when controlling for other demographic, geographic, and economic variables religious fractionalization actually could have a negative effect on the onset of civil war, contrary to their expectations. However, their results were also statistically insignificant. (Fearon & Laitin 2001) Barieri and Reuveny (2005) found that that religious fractionalization could have a mixed effect on the presence of civil war. The coefficients for religious fractionalization were positive for regressions using the paper's main dataset but negative for a subset that only included developing states. In 2009, Jeffrey Dixon conducted a meta study of different quantitative papers analyzing the determinants of civil war. The paper concluded that social fractionalization including

religious fractionalization often produces negative coefficients with at best medium levels of statistical significance. (Dixon 2009)

## 2.2 Institutions

In terms of the effect institutions have on post-colonial development, there is a debate on what form of government leads to more post-colonial violence. The debate mainly centers around democracies versus autocracies. Certain researchers argue that the comparison between democracies and autocracies cannot be treated as a simple binary between these two forms of government. (Henderson & Singer 2000) Rather it is better to assess these two forms of government on a sliding scale. These researchers go onto argue that it is neither pure autocracies nor pure democracies that are more prone to post-colonial violence. Rather semi-democracies are more vulnerable as unlike full democracies, semi-democracies lack robust institutions or processes to handle internal discontent (e.g genuine elections or genuine freedom of press). With respect to autocracies, these forms of government have a strong central, coercive apparatus that can protect the state and the political elite. A strong coercive apparatus could effectively destroy any resistance and more importantly, deter people from even starting separatist groups. (Henderson & Singer 2000) Though, democracies that do engage in civil war tend to have fewer deaths than those in autocracies. (Lacina 2006)

## 2.3 Resources

Similar to demographic diversity, there is also a large body of research regarding the relationship between natural resources and risk of civil war. Certain papers have found that higher levels of natural resources are correlated with an increase in civil war. One paper in particular, *Greed and Grievance in Civil War* is very notable in this area. In this paper, Collier and Hoeffler (2004) argue that commodities make rebellion easier and attractive due

to increased opportunities for extortion. With respect to specific resources, some researchers have found the presence of diamonds to be salient. Easily extracted diamonds can help fund state opposition therefore increasing the chances of conflict. Interestingly, diamonds seem to especially increase civil wars related to ethnic conflict. (Lujala 2005) Conversely, there are arguments that when controlling for government repression and institutions, diamonds have no effect on civil war. (Regan 2005) Similarly, with respect to oil, recent research argues against Collier and Hoeffler (2004) that oil helps fund rebel groups thus promoting civil war. These researchers argue that oil producing countries already have low state capabilities or that oil has no statistical significance when other demographic or economic control variables are added. (Fearon 2005, Cotet & Tsui 2013, Thies 2010)

## 2.4 Type of Colonialism

Other studies regarding post-colonial violence often take the form of case studies between two colonial powers and their institutional practices. These studies aim to compare the differing practices and theories colonizing countries employed around the world. A common comparison amongst these types of studies is between French and British colonialism. In one particular study, researchers found that in comparison to British hands off colonialism, harsher French assimilationist policies and direct rule in fact lead to less post-colonial violence. They argue that assimilation and direct rule enabled select ethnic groups living in urban areas to access political and economic capital. (Blanton, Mason, & Athow 2001) In contrast, other ethnic groups were effectively barred from accessing such capital and the corresponding advantages post-independence. Thus, groups with access to political and economic capital post-independence were more able to control the surviving political institutions and prevent less empowered ethnic groups from resisting. While a counterargument to these theories is that the British often left local elites in power which would give a country some institutional memory on how to operate itself post-independence, the very existence

of established institutions serves to motivate groups to fight for control of said institutions. (Blanton, Mason, & Athow 2001)

With respect to settler versus extractive colonialism, Acemoglu, Johnson, and Robinson (2001) was one of the major papers to assess colonialism through settler death rates and protection from expropriation as proxies for level of settler colonialism. They found that higher settler death rates were correlated with lower GDP. Their study also found that higher levels of protection from expropriation were correlated with higher GDP and that continent and latitude do not have a significant impact on GDP when added as control variables. The authors further argue that since continent is not significant, cultural and geographic factors do not affect wealth. They also found that latitude is not significant since it is likely correlated with institutions. While their study primarily focused on GDP as its dependent variable, this study will use similar underlying theories with respect to the occurrence of post-colonial civil war.

Overall, there is a debate on the effects different variables have on the emergence of civil war and how these variables interact with each other. In addition, many papers concerning civil war, whether quantitative or qualitative, do not control for types of colonialism. Thus there is a literature gap addressing how colonial policies and powers affected post-colonial civil war. This thesis attempts to add to previous civil war research in looking at how different types of colonialism may have led to increased or decreased levels of civil war while also controlling for variables previously visited.

# Chapter 3

# Theory & Hypotheses

## 3.1 Theory

This study's main independent variables will be related to settler colonialism and levels of extraction. The paper will follow Acemoglu, Johnson, and Robinson (2001) and use settler death rates to gauge the level of settler colonialism and protection from expropriation to gauge the level of extraction. Theoretically, colonies designed as settler colonies would have lower rates of settler mortality as the colonizing power would have more incentive to create the relevant institutions to protect the physical safety of settlers and their property that would survive post-independence. Similarly, colonies set up for extraction would likely have laws and institutions designed so that the government could easily expropriate people. (Acemoglu, Johnson, & Robinson 2001)

## 3.2 $H_1$

Lower levels of extraction (measured by protection from expropriation) will decrease the probability of civil war. Extractive colonies were set up to transfer resources back to the colonizer. Thus, colonizing powers were less likely to establish government institutions necessary to protect the private property of settlers in extractive colonies. (Acemoglu, Johnson, & Robinson 2001) Not having institutions designed to protect people's rights or limit government powers could lead to greater instability and grievances which would increase the likelihood of civil war post-independence.

## 3.3 $H_2$

Settler colonialism (measured by settler deaths) will deter civil war. Settler colonies are measured by low settler deaths. If a colony was a settler colony, the colonizing country more likely invested more time into developing governing institutions that would be necessary to create stability post-independence. (Acemoglu, Johnson, & Robinson 2001) Thus as the number of deaths goes up, a higher incidence of civil war is expected.[1]

[1]A counter argument to this point is that settler colonialism could increase odds of civil war due to conflicts between settlers and indigenous people post-independence.

# Chapter 4

# Design

## 4.1 Dataset Structure

The dataset of this thesis is structured as a panel dataset with one row representing one country and one year. This thesis will also use two subsets of this dataset. The main subset is comprised of countries independent post-1945. A supplementary subset will be comprised of countries independent both pre and post-1945 but will only address civil war experienced post-1945, similar to the main subset. The rationale for these two subsets is to look closely at civil war during a country's early years when it is most vulnerable to instability given available data.[1]

## 4.2 Independent Variables

Other variables to be examined are primarily demographic and geographic in nature as these variables are not caused by colonialism. These control variables are necessary for two reasons. One, many studies such as the ones previously mentioned have focused on demographic diversity as a catalyst for post-colonial violence. The demographic variables

[1]Civil war data in the UCDP Armed Conflict Dataset v4. 2009 only goes back to 1946.

that are included in this study are 1) ethnic diversity and 2) religious diversity. Demographic diversity is also a pre-treatment variable in that colonialism would not have a large impact on diversity in a given region. In addition, population will be controlled; Fearon and Laitin (2001) found that larger populations make it harder for states to control what goes on at the local level and offers rebellious groups a larger pool from which they can recruit. For geographic diversity, data for latitude, borders, and mountains will be included. Latitude data in the past has been used as a proxy for climate in studies that attempt to correlate different climates with levels of violence. Mountainous areas have been theorized in many studies to promote violence as mountains can provide shelter to smaller armed groups thus making it harder for state powers to effectively destroy resistance. (de Rouen Jr & Sobek 2004) The similar logic can be applied to noncontiguous states. (Barbieri & Reuveny 2005)

Dummy variables for continent will also be added as control variables. The dummy variables for the continents are to control for regional instability that may affect a country more than internal institutional weaknesses. Similarly, dummy variables will be added to denote the decade of the observation and for how many years since a country's independence has lapsed. The temporal variables are to account for global events in a given era that could be destabilizing and to control for how new countries can be weaker as they form their institutions and overall organization.

## 4.3 Dependent Variable

As previously stated, the dependent variable will be civil war. This variable will be coded in three ways. An onset variable will be created denoting the first year of a conflict. This variable will be coded as 1 for onset, 0 for times of no civil war, and NA for ongoing conflict. Variables will be also be created for occurrence of major and minor civil war. (Onset will be the dependent variable in the main analysis of the thesis. Models that regress onto major and minor civil war will be supplementary.) This study will use the Uppsala Conflict Data

Program (UCDP) definitions of a minor civil war as 25-999 battle deaths related deaths in a given year and a major civil war as 1000 or more battle related deaths in a given year. (Gleditsch et. al. 2002)

## 4.4 Models

### 4.4.1 Model 1

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \epsilon$$

### 4.4.2 Model 2

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \beta_4 Population + \beta_5 ProtectionFromExpropriation/SettlerDeaths + \epsilon$$

### 4.4.3 Model 3

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \beta_4 Population + \beta_5 ProtectionFromExpropriation/SettlerDeaths + \beta_6 EthnicFractionalization + \beta_7 ReligiousFractionalization + \epsilon$$

### 4.4.4 Model 4

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \beta_4 Population + \beta_5 ProtectionFromExpropriation/SettlerDeaths + \beta_6 EthnicFractionalization + \beta_7 ReligiousFractionalization + \beta_8 Decade + \epsilon$$

### 4.4.5 Model 5

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \beta_4 Population + \beta_5 ProtectionFromExpropriation/SettlerDeaths + \beta_6 EthnicFractionalization + \beta_7 ReligiousFractionalization + \beta_8 YearsSinceIndependence + \epsilon$$

### 4.4.6 Model 6

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \beta_4 Population + \beta_5 ProtectionFromExpropriation/SettlerDeaths + \beta_6 EthnicFractionalization + \beta_7 ReligiousFractionalization + \beta_8 Continent + \epsilon$$

### 4.4.7 Model 7, Interest Model

$$Onset = \beta_0 + \beta_1 Latitude + \beta_2 Mountains + \beta_3 Noncontiguous + \beta_4 Population + \beta_5 ProtectionFromExpropriation/SettlerDeaths + \beta_6 EthnicFractionalization + \beta_7 ReligiousFractionalization + \beta_8 PolityII + \beta_9 Instability + \beta_{10} Energy + \epsilon$$

### 4.4.8 Model Summary

Models one through five progressively add variables through time. Model one exclusively looks at pre-existing geographic variables. Model two then adds the proxy variables for type of colonialism and population while model three adds variables for ethnic and religious fractionalization. Note that starting in model two, latitude is omitted as its correlation coefficient with ethnic fractionalization was over .5 and Acemoglu, Johnson, and Robinson (2001) found that it is correlated with institutions and therefore settler deaths. Models 4 and 5 introduce controls for time: decade of civil war and years since independence. Model 6 introduces continent variables. The continent variable is to reflect geopolitical situations that may have impacted the stability of nations in that region hence why it is not included in model one which focuses more on direct geographic effects on civil war. Again, models

two through six will have two main versions that regress settler death rates and protection from expropriation separately onto onset of civil war.

Model seven introduces democracy (Polity II), energy (as a proxy for GDP), and instability. As this study is concerned with the relationship between colonialism and civil war, these variables could be considered post-treatment since they are measured post-independence and likely related with the surviving institutions determined by the type of colonialism a country experienced. However, such effects may be of interest given that many papers regarding civil war control for these three factors. (The results of this model can be found in the appendix.)

The methods used in this thesis are different than those implementented in Acemoglu, Johnson and Robinson (2001). In their paper, Acemoglu, Johnson and Robinson treated settler deaths as an instrumental variable when regressing protection from expropriation onto GDP. Here, settler deaths acts as a measure for the suitability a location has in being a settler colony. The ability of a location to be a settler colony would later determine what institutions the colonizer created in said colony. Thus the effect of settler deaths can be seen through protection against expropriation which is also a proxy for institutions. This approach is valid when analyzing GDP as institutions affect GDP. However, when analyzing civil war, the use of settler deaths as an instrumental variable may not be the best approach. The effects of settler deaths (as a proxy for suitability to be a settler colony) on civil war may be seen through other variables such as weather or disease which would also affect onset of civil war.

## 4.5 Data

As this is an observational study, data was collected from a variety of sources. Data for the main independent variables (settler death rates and protection from expropriation) were gathered from Acemoglu, Johnson, and Robinson (2001). Data on latitude in terms of absolute latitude (measured from equator and scaled between 0 and 1) was also collected from Acemoglu, Johnson, and Robinson (2001). They measure settler death on a logged scale and used data from the Political Risk Services for protection against expropriation which is measured on a one to ten scale where a higher score means more protection. Percent of mountainous terrain, noncontiguous state, religious fractionalization, and ethnic fractionalization were taken from the Fearon and Laitin (2001) panel data. Civil war data was taken from the UCDP Armed Conflict Dataset Version-4 2009. (Gleditsch et. al., 2002) This dataset is also a panel dataset. In addition, it uses intensity level to classify interstate conflicts as minor (intensity level = 1) or major (intensity level = 2) per year, meaning a civil war that spanned more than one year could have different levels of intensity depending on the year. Data for political stability was taken from the Polity Project. (Marshall et al. 2018) Similar to Fearon and Laitin (2001), if within the last 3 years the polity score changed by a magnitude of 3, instability was coded as a 1 and 0 if not. Population and primary energy consumption (as a proxy for GDP) were taken from the Correlates of War Project National Material Capabilities dataset version 5. (Singer, Bremer, & Stuckey 1972)

# Chapter 5

# Results

As previously mentioned, each model with the treatment variable was constructed twice: 1) one with protection from expropriation and 2) one with settler death rates. In addition, each model was run on a subset containing countries that gained independence post-1945 and a subset that contained countries that gained independence both pre and post-1945. The latter dataset, however, still only looks at civil war experiences post-1945.

## 5.1 Protection from Expropriation (Post-1945 independent countries only)

For models regressing protection from expropriation onto onset of civil war (both minor and major combined) protection from expropriation had negative coefficients with statistical significance across all models. Ethnic fractionalization produced positive coefficients though only gained statistical significance at the .1 level in all models except in model 6 that controlled for continents. In this model, ethnic fractionalization was able to gain statistical significance at the .05 level. Religious fractionalization produced negative coefficients but only gained significance at the .1 level in models three, four, and six. In terms of geographic variables, mountains lacked statistical significance in all models. Noncontiguous produced

positive coefficients with statistical significance at the .01 levels in models one through five and at the .1 level in model six. Continent and decade variables also lacked statistical significance.

The majority of the statistically significant coefficients (at .05 level) also produced substantively significant results. The coefficients for protection from expropriation ranged from -0.37734 to -0.44272 meaning that an increase of the variable by one decreases the odds of civil war by about 32 to 36 percent.[1] Thus protection against expropriation has a strong effect on decreasing the probability of civil war. Noncontiguous also had a large effect on the onset of civil war. Being a noncontiguous state increased the odds of having civil war by over 100 percent. While population produced positive and highly statistically significant coefficients, an increase of ten thousand in population only increased the odds of civil war by less than one percent. While this effect may be small for an increase of just ten thousand, an increase in population of one million would produce a more significant effect.

## 5.2 Settler Deaths

## (Post-1945 independent countries only)

For models regressing the log of settler deaths onto onset of civil war (both minor and major) settler death rates produced negative coefficients across all models. However, the variable did not reach statistical significance in any of the models. Similar to the models with protection from expropriation, ethnic fractionalization produced positive coefficients but with stronger statistical significance. Interestingly, religious fractionalization produced negative coefficients with strong statistical significance. For geographic variables, percent mountainous produced positive coefficients with statistical significance unlike in the models with protection from expropriation which produced both statistically insignificant positive and

[1]Calculated by taking the odds ratios.

negative coefficients. Noncontiguous again produced positive coefficients but none reached statistical significance. Continent and decade variables also lacked statistical significance.

Substantively, this set of models produced different results than the previous set. An increase of one in percent mountainous increases odds of civil war by about one to two percent. Ethnic fractionalization and religious fractionalization also had large substantive effects. A .1 increase in ethnic fractionalization results in the odds of civil war increasing by about 20 percent. Interestingly, a .1 increase in religious fractionalization decreases odds of civil war by about 15 percent. Population had about the same substantive effects as in the previous set of models.

## 5.3 Protection from Expropriation (Pre and Post-1945 independent countries)

(Table in Appendix)

For the models regressing protection from expropriation onto onset of civil war for all countries independent pre and post-1945, protection from expropriation again had negative coefficients in all models. The coefficient also reached statistical significance of .01 in all models. Similar to previous models, noncontiguous and population also had positive and statistically significant coefficients. Ethnic fractionalization also produced positive and statistically significant coefficients while religious fractionalization produced a mix of positive and negative coefficients though none were statistically significant. Substantively, these results are similar to the results using the subset of countries independent post-1945. However, the main differences are that the time and continent variables gained statistical significance. This could indicate that when taking more observations into account, the latter half of the 1900s had more destabilizing effects on countries than in the early 2000s and that continental geographic factors also contributed to instability.

## 5.4 Settler Deaths

## (Pre and Post-1945 independent countries)

(Table in Appendix)

For the models regressing settler deaths onto onset of civil war for all countries independent pre and post-1945, settler deaths produced positive coefficients. Unlike in the models with only countries independent post-1945, only the settler death coefficients in the models controlling for ethnic and religious fractionalization and continent lacked statistical significant at the .05 level. The percent mountainous and noncontiguous variables lost statistical significance while population continued to have statistically significant, positive coefficients. Like in the previous set of models, the coefficients for decade and continents all gained statistical significance and were positive. Substantively, the effects of time and continental location where about the same as in the previous set of models.

Table 5.1: Protection from Expropriation and Onset of Civil War

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Onset of Civil War, countries ind. post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −2.53507*** | | | | | |
| | (0.82780) | | | | | |
| Percent Mountainous | 0.00466 | 0.00614 | 0.00530 | 0.00539 | −0.00072 | −0.00251 |
| | (0.00447) | (0.00877) | (0.00874) | (0.00879) | (0.00958) | (0.00981) |
| Noncontiguous | 0.83096*** | 1.13942*** | 1.21718*** | 1.29148*** | 1.36193*** | 0.73483* |
| | (0.23408) | (0.31303) | (0.32017) | (0.32871) | (0.33920) | (0.38853) |
| Population 10000s | | 0.00005*** | 0.00004*** | 0.00004*** | 0.00004*** | 0.00003** |
| | | (0.00001) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Protection from Expropriation | | −0.44272*** | −0.37734*** | −0.39041*** | −0.40414*** | −0.38514*** |
| | | (0.08250) | (0.08686) | (0.08761) | (0.09036) | (0.09669) |
| Ethnic Fractionalization | | | 0.87369* | 0.85411* | 0.87558* | 1.29167** |
| | | | (0.51064) | (0.51581) | (0.52778) | (0.63378) |
| Religious Fractionalization | | | −0.93222* | −0.97070* | −0.73601 | −0.99686* |
| | | | (0.53750) | (0.54453) | (0.55780) | (0.57314) |
| 1940s | | | | 0.99103 | Sub S. A. | 0.84901 |
| | | | | (0.63192) | | (1.04051) |
| 1950s | | | | −0.73561 | Asia | 1.73692 |
| | | | | (0.57787) | | (1.08149) |
| 1960s | | | | −0.38902 | MENA | 0.87675 |
| | | | | (0.34559) | | (1.07122) |
| 1970s | | | | −0.29013 | | |
| | | | | (0.31840) | | |
| 1980s | | | | −0.45582 | | |
| | | | | (0.34821) | | |
| 1990s | | | | 0.15376 | | |
| | | | | (0.29965) | | |
| Years Since Independence | | | | | 0.00366 | |
| | | | | | (0.00240) | |
| Constant | −2.92979*** | −0.81385* | −1.35341** | −1.09473* | −1.35834** | −2.40228** |
| | (0.17432) | (0.47512) | (0.63496) | (0.66465) | (0.64564) | (1.20276) |
| Observations | 3,043 | 2,384 | 2,384 | 2,384 | 2,287 | 2,384 |
| Akaike Inf. Crit. | 1,009.66000 | 805.02270 | 805.03780 | 807.84100 | 793.22670 | 805.41050 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 5.2: Settler Deaths and Onset of Civil War

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Onset of Civil War, countries ind. post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −2.53507*** | | | | | |
| | (0.82780) | | | | | |
| Percent Mountainous | 0.00466 | 0.01083** | 0.01690*** | 0.01731*** | 0.01793*** | 0.01620*** |
| | (0.00447) | (0.00511) | (0.00575) | (0.00576) | (0.00615) | (0.00600) |
| Noncontiguous | 0.83096*** | 0.34417 | 0.36255 | 0.37929 | 0.32462 | 0.23008 |
| | (0.23408) | (0.30071) | (0.31649) | (0.32434) | (0.32156) | (0.39081) |
| Population 10000s | | 0.00004*** | 0.00003** | 0.00003** | 0.00003** | 0.00003** |
| | | (0.00001) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Settler Deaths, Log | | 0.08576 | −0.06008 | −0.05032 | −0.07432 | −0.11263 |
| | | (0.09678) | (0.10819) | (0.10784) | (0.10943) | (0.11626) |
| Ethnic Fractionalization | | | 1.88230*** | 1.83156*** | 1.86495*** | 1.65485*** |
| | | | (0.58063) | (0.58063) | (0.60385) | (0.62549) |
| Religious Fractionalization | | | −1.55665*** | −1.52392*** | −1.71997*** | −1.68467*** |
| | | | (0.51594) | (0.52038) | (0.56738) | (0.58509) |
| 1940s | | | | 0.47904 | Sub S. A. | 1.30895 |
| | | | | (0.84551) | | (1.04537) |
| 1950s | | | | −0.28535 | Asia | 1.32633 |
| | | | | (0.53660) | | (1.07163) |
| 1960s | | | | −0.43261 | MENA | 0.72781 |
| | | | | (0.34858) | | (1.14261) |
| 1970s | | | | −0.36983 | | |
| | | | | (0.32113) | | |
| 1980s | | | | −0.53556 | | |
| | | | | (0.34647) | | |
| 1990s | | | | 0.33304 | | |
| | | | | (0.28142) | | |
| Years Since Independence | | | | | −0.00129 | |
| | | | | | (0.00204) | |
| Constant | −2.92979*** | −3.75588* | −3.55906** | −3.45297* | −3.35505** | −4.27864** |
| | (0.17432) | (0.55423) | (0.57880) | (0.60655) | (0.64006) | (1.17992) |
| Observations | 3,043 | 2,190 | 2,190 | 2,190 | 2,134 | 2,190 |
| Akaike Inf. Crit. | 1,009.66000 | 837.21540 | 826.18790 | 827.81150 | 817.63730 | 828.46790 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

# Chapter 6

# Discussion

## 6.1 $H_1$

$H_1$ hypothesized that lower levels of extraction, measured by protection from expropriation, would decrease the probability of civil war. Again, this follows the theory that colonizing powers in settler colonies would be motivated to create institutions and rule of law that would protect the property rights of settlers. These institutions would survive post-independence and would help create stability in the new country. Conversely, in extractive colonies, colonizers would not be interested in protecting property rights as more protections from expropriation inherently mean it is harder to extract resources from the inhabitants in the area.

As the results from the main tables show, protection from expropriation consistently produced negative and statistically significant coefficients. The variable is on a one to ten scale in which a higher number means more protections against expropriation. Thus, negative coefficients indicate that more protections decreases the odds of a civil war from starting. This result is consistent with $H_1$ that extractive colonialism increases the odds a country would experience civil war post-independence.

Property rights and government constraints as a result of low extraction appear to dis-

incentivize people from starting a civil war. This could be due to a few reasons. Property rights and a government system that effectively enforces laws regarding ownership most likely allows for individuals to amass and control larger amounts of capital. If individuals do not have to fear the government taking their possessions away or know that others will face legal repercussions if property is obtained illegally, they are probably more inclined to spend time and resources to gain property in the first place. Thus, the personal cost of civil war is higher and individuals would not be incentivized to start a conflict. Conversely, in countries where property rights are few and laws are not enforced, personal costs related to starting violent actions when having grievances are lower. This would follow Collier and Hoefflers (2007) logic that individual wealth decreases odds of civil war. Further, using violent means may also be the only way groups of individuals may able to protect their assets if the government does not have or will not enforce laws that protect individual capital. Another possible reason why protection from expropriation decreases odds of civil war is that the government has less opportunities to directly create dissent or dissatisfaction amongst their population as institutions cannot expropriate.

## 6.2 $H_2$

$H_2$ hypothesized that settler colonialism, measured through settler deaths, would deter the onset of civil war. This notion goes back to the theory that the colonizing power would be more incentivized to create institutions that would protect settlers and to create environments in the colony that would encourage more settlement from the home country to the colony. The results from the main onset tables indicate that settler deaths is not a key predictor of civil war onset. Thus $H_2$ is *rejected*. Firstly, the coefficients for settler deaths were largely negative which means that the more settlers died in a colony on average, the less likely that colony was to experience civil war post-colonialism. This runs opposite to the theory that settler colonies would be more stable post-independence. Secondly, many of

these coefficients were also statistically insignificant meaning that even given their negative coefficients, one cannot say they have any effect with much certainty.

## 6.3 Reconciling the Difference in Results

The results from the models using protection against expropriation and settler deaths as proxy variables for colonialism present somewhat conflicting results. In Acemoglu, Johnson and Robinson (2001), the inverse relationship between protection against expropriation and settler deaths is reflected in their opposite effect on GDP. The inverse correlation between the two variables and their inverse effect on GDP strengthen the notion that colonialism is either settler or extractive. However, this type of inverse relationship was not seen when the two variables were regressed onto onset of civil war.

While both settling and extracting could be seen as a binary definition for colonialism, given the available proxy variables and their correlation coefficient, the results indicate that their inverse relationship does not necessarily translate into inverse effects. The inconsistency in results is likely due to the fact that these variables are proxies. In addition, protection from expropriation likely better measures extraction than rates of settling. Similarly, settler deaths likely better measures settler rates than extraction. While ideally variables should directly measure a specific target, proxy variables will always lack a certain level of specificity and may therefore be open to subjective interpretation.

While the correlation coefficient between settler deaths and protection from expropriation was high, it was not exactly one. Thus these two variables are at least partially independent. Looking at the results through a lens that extractive colonialism is independent of settler colonialism indicates that higher levels of extraction increase the odds of civil war onset. This follows the theory that colonies with higher levels of extraction lack certain institutions and laws, two aspects that protection against expropriation measures. The results also indicate that the ability of colonizer to settler an area does not necessarily have a consistent impact

on the onset of civil war. This result and the fact that protection against expropriation is also a proxy for institutions further strengthens the notion that institutions matter more than the actual creation of a settler colony.

## 6.4 Other Control Variables

With regards to the demographic variables, population consistently produced positive and statistically significant coefficients in all of the main models. This follows previous research that large populations can pose challenges to states in terms of controlling what happens on the local level thus making it easier for dissident groups to form. (Fearon & Laitin 2001) In terms of social differences, religious fractionalization often did not produce statistically significant results. More interestingly, the variable also produced negative coefficients. This matches Dixon (2009) that variables related to religious division often produce negative coefficients and for the most part lack meaningful significance. Ethnic fractionalization proved to be have a stronger influence on the onset of civil war. While it did not produce coefficients significant at the .05 level in every model, the variable was more consistent than religious fractionalization. Thus the results appear to support previously mentioned research indicating ethnic divisions as a determinant of civil war. These results interestingly differ from Fearon and Laitin (2001) paper that found that ethnic and religious fractionalization produced null coefficients. One possible explanation is that this paper focused solely on countries that experienced colonialism with an emphasis on those that became independent only after 1945. Thus the statistically significant results found in this paper could indicate that ethnic fractionalization could have a stronger influence in a developing countries.

In terms of geographic variables, percent mountainous and noncontiguous presented mixed results; noncontiguous produced positive and statistically significant coefficients when controlling for protection from expropriation and statistically insignificant results when controlling for settler deaths. The opposite occurred for percent mountainous; this control vari-

able produced statistically insignificant results when controlling for protection from expropriation and positive, statistically significant coefficients when controlling for settler deaths. In addition, dummy variables for continents also produced statistically insignificant results which could indicate that regional instability in those areas did not have a major effect on civil war.

# Chapter 7

# Robustness Checks

In creating the models, it was first important to understand the relationship between the main independent variables: protection from expropriation and settler deaths. Acemoglu, Johnson, and Robinson (2001) found that higher levels of protection from expropriation was correlated with higher rates of GDP. Similarly, they also found that higher rates of settler deaths was correlated with lower rates of GDP. From their analysis, it would not be surprising if settler deaths and protection from expropriation were negatively correlated with each other. In fact, their correlation coefficient between the two main independent variables was -0.55766. As this coefficient has a magnitude greater than 0.5, they were not combined together in the modeling hence the creation of separate regressions.

One critique of the models is that the high N each model has may overstate the statistical significance of the coefficients given that many are unchanging over time. To address this, separate models were made in which each country represented a single observation instead of using country and year observations as in the main models. For these robustness check regressions, the same control variables were used and the DV was a binary variable for whether a country experienced civil war post-1945. These regressions found that despite the significantly low N, protection from expropriation still produced negative coefficients with statistical significance at the .05 level. Conversely, settler deaths produced negative,

statistically insignificant coefficients. This reflects the main models in which protection from expropriation consistently produced negative, statistically significant coefficients while setter deaths often produced negative, statistically insignificant coefficients.

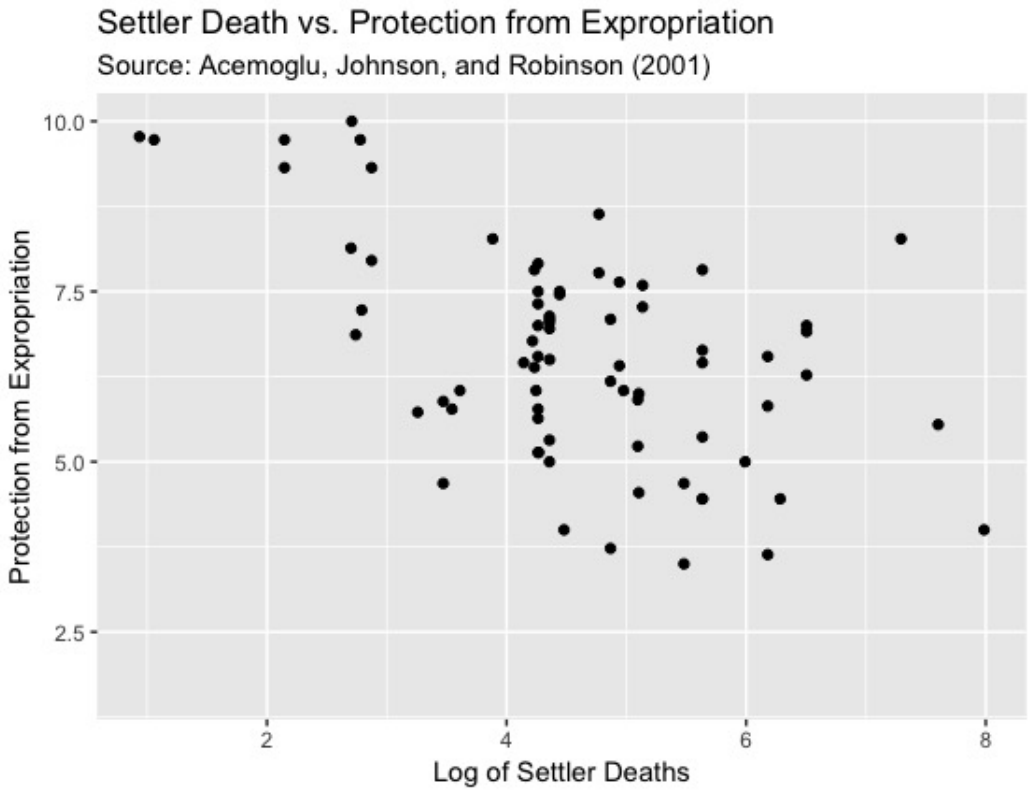


Figure 7.1: Settler Death vs. Protection from Expropriation

To further bolster the main results, a random effects model was also created using protection against expropriation as the main independent variable. A random effects model was selected as an additional check as this type of equation controls for unobserved heterogeneity that is constant over time. (The control variables such as the geographic and social variables are for the most part constant over time.) The results of the random effects models is consistent with the main models in that protection from expropriation continues to yield a negative and statistically significant coefficients.

Table 7.1: Robustness Checks, 1 country = 1 observation

| | *Dependent variable:* | |
|---|---|---|
| | Occurrence of Civil War, countries ind. post 1945 | |
| | Model 1 | Model 2 |
| | (1) | (2) |
| Percent Mountainous | 0.07942* | −0.01919 |
| | (0.04405) | (0.05702) |
| Noncontiguous | 0.86226 | 17.79710 |
| | (1.68002) | (1,732.04300) |
| Population, 10000s | 0.0013 | 0.0018 |
| | (0.0011) | (0.0014) |
| Settler Deaths, log | −0.14970 | |
| | (0.46528) | |
| Protection from Expropriation | | −0.68998* |
| | | (0.36932) |
| Ethnic Fractionalization | 4.94141 | 1.10634 |
| | (3.11997) | (1.97979) |
| Religious Fractionalization | −4.86159* | −2.37911 |
| | (2.54829) | (2.33635) |
| Constant | −0.64940 | 4.46153 |
| | (2.63653) | (2.90397) |
| Observations | 44 | 48 |
| Akaike Inf. Crit. | 51.93367 | 56.80836 |
| *Note:* | | *p<0.1; **p<0.05; ***p<0.01 |

Table 7.2: Robustness Checks, 1 country = 1 observation, Pre and Post 1945 Data

| | *Dependent variable:* | |
|---|---|---|
| | Occurrence of Civil War, pre and post 1945 data | |
| | Model 1 | Model 2 |
| | (1) | (2) |
| Percent Mountainous | 0.08319* | −0.00482 |
| | (0.04714) | (0.05665) |
| Noncontiguous | 0.84169 | 17.75713 |
| | (1.67481) | (1,815.43100) |
| Population, 10000s | 0.0011 | 0.0014 |
| | (0.0011) | (0.0013) |
| Settler Deaths, log | −0.15495 | |
| | (0.47345) | |
| Protection from Expropriation | | −0.78631** |
| | | (0.35101) |
| Ethnic Fractionalization | 4.78419 | 1.04436 |
| | (3.08749) | (1.95758) |
| Religious Fractionalization | −5.13580** | −2.47376 |
| | (2.59719) | (2.35031) |
| Constant | −0.30220 | 5.27067* |
| | (2.63369) | (2.83502) |
| Observations | 45 | 51 |
| Akaike Inf. Crit. | 52.57704 | 58.16884 |
| *Note:* | | *p<0.1; **p<0.05; ***p<0.01 |

Table 7.3: Random Effects: Protection from Expropriation

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Onset of Civil War, countries ind. post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −0.08544 | | | | | |
| | (0.06282) | | | | | |
| Percent Mountainous | 0.00018 | 0.00043 | 0.00033 | 0.00022 | 0.00013 | −0.00009 |
| | (0.00035) | (0.00065) | (0.00065) | (0.00057) | (0.00073) | (0.00072) |
| Noncontiguous | 0.03175 | 0.03664 | 0.04385* | 0.05547*** | 0.04660* | 0.01523 |
| | (0.02063) | (0.02295) | (0.02324) | (0.02146) | (0.02487) | (0.02790) |
| Population 10000s | | 0.000004*** | 0.000003*** | 0.000003*** | 0.000003*** | 0.000002** |
| | | (0.000001) | (0.000001) | (0.000001) | (0.000001) | (0.000001) |
| Protection from Expropriation | | −0.01566*** | −0.01369** | −0.01520*** | −0.01407** | −0.01383** |
| | | (0.00580) | (0.00595) | (0.00525) | (0.00626) | (0.00652) |
| Ethnic Fractionalization | | | 0.04223 | 0.04152 | 0.04101 | 0.07379* |
| | | | (0.03172) | (0.02778) | (0.03402) | (0.04118) |
| Religious Fractionalization | | | −0.05210 | −0.05323 | −0.04769 | −0.07056 |
| | | | (0.03778) | (0.03323) | (0.04051) | (0.04507 |
| 1940s | | | | 0.08512** | Sub S. A. | −0.00752 |
| | | | | (0.04078) | | (0.03478) |
| 1950s | | | | −0.03424 | Asia | 0.05033 |
| | | | | (0.02173) | | (0.04121) |
| 1960s | | | | −0.01446 | MENA | −0.00418 |
| | | | | (0.01364) | | (0.03747) |
| 1970s | | | | −0.00918 | | |
| | | | | (0.01261) | | |
| 1980s | | | | −0.01494 | | |
| | | | | (0.01276) | | |
| 1990s | | | | 0.00713 | | |
| | | | | (0.01283) | | |
| Yrs. Ind. | | | | | 0.00011 | |
| | | | | | (0.00017) | |
| Constant | 0.05763*** | 0.13112*** | 0.11559*** | 0.13058*** | 0.11562** | 0.11043* |
| | (0.01401) | (0.03696) | (0.04459) | (0.04023) | (0.04723) | (0.05670) |
| Observations | 3,043 | 2,384 | 2,384 | 2,384 | 2,287 | 2,384 |
| $R^2$ | 0.00537 | 0.01359 | 0.01480 | 0.02312 | 0.01432 | 0.01547 |
| Adjusted $R^2$ | 0.00438 | 0.01193 | 0.01231 | 0.01818 | 0.01129 | 0.01174 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Sub-S. A. = Sub-Sahara Africa

# Chapter 8

# Conclusion

While many papers researching civil war exist, there is a gap in literature attempting to find a direct link between colonialism and post-colonial civil war. Therefore, this paper attempted to build off existing research by controlling for types of colonialism to find if there is a connection between what happened in the colonial and post-colonial eras. The results found that higher levels of extraction are correlated with higher odds of civil war and that levels of settler colonialism do not necessarily have an impact. Since the proxy variable to control for extraction is also a proxy variable for institutions, this paper also found that there is a relationship between institutions that protect property rights and limit government expropriation and the onset of civil war. Future research could apply the same logic presented here to see if there is a connection between colonialism and other forms of post-colonial violence such as genocide or military coups. Such research would also further test the usefulness of protection against expropriation and settler deaths as proxy variables for colonialism. With regard to policy implications, the conclusion that institutions affect onset of civil war can be a lesson for interventionist conflicts. If intervening countries expect stability in their target state, they must be willing to spend time and resources in building strong institutions that are also limited in their expropriative powers. As the results of this thesis demonstrate, governments that can easily expropriate are harmful for long term peace.

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# Appendix

Table 1: Protection from Expropriation and Onset of Civil War Post 1945

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Onset of Civil War | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −2.14653*** | | | | | |
| | (0.68552) | | | | | |
| Percent Mountainous | −0.00891** | −0.00829 | −0.00759 | −0.00227 | −0.01338** | 0.00259 |
| | (0.00442) | (0.00557) | (0.00607) | (0.00608) | (0.00676) | (0.00708) |
| Noncontiguous | 0.58837*** | 0.95307*** | 0.91118*** | 0.93638*** | 1.06071*** | 0.41200 |
| | (0.21840) | (0.27944) | (0.28595) | (0.29227) | (0.29498) | (0.32921) |
| Population 10000s | | 0.0001*** | 0.0001*** | 0.0001*** | 0.0001*** | 0.00004*** |
| | | (0.00001) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Protection from Expropriation | | −0.37611*** | −0.34878*** | −0.35576*** | −0.35902*** | −0.30926*** |
| | | (0.05862) | (0.06022) | (0.06112) | (0.06121) | (0.06152) |
| Ethnic Fractionalization | | | 1.18755*** | 1.05770*** | 1.60254*** | 0.86870* |
| | | | (0.38437) | (0.38865) | (0.42597) | (0.51478) |
| Religious Fractionalization | | | 0.07345 | −0.12614 | 0.332001 | −0.51566 |
| | | | (0.47348) | (0.47060) | (0.49531) | (0.48514) |
| 1940s | | | | 0.89584** | Sub S. A. | 0.96849*** |
| | | | | (0.41063) | | (0.35824) |
| 1950s | | | | 0.70006* | Asia | 1.71638*** |
| | | | | (0.38009) | | (0.34631) |
| 1960s | | | | 1.04690*** | MENA | 0.95213*** |
| | | | | (0.28590) | | (0.31895) |
| 1970s | | | | 0.93302*** | | |
| | | | | (0.28925) | | |
| 1980s | | | | 0.91048*** | | |
| | | | | (0.30042) | | |
| 1990s | | | | 1.09939*** | | |
| | | | | (0.28452) | | |
| Years Since Independence | | | | | 0.00502** | |
| | | | | | (0.00205) | |
| Constant | −3.21428*** | −1.39129*** | −2.24188*** | −2.80808*** | −2.75708*** | −2.85832*** |
| | (0.17023) | (0.33981) | (0.44279) | (0.47432) | (0.49690) | (0.47331) |
| Observations | 6,859 | 5,504 | 5,504 | 5,504 | 5,407 | 5,504 |
| Akaike Inf. Crit. | 1,536.90200 | 1,273.25600 | 1,264.77200 | 1,253.08600 | 1,249.58100 | 1,243.85600 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 2: Settler Deaths and Onset of Civil War Post 1945

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Onset of Civil War | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −2.14653*** | | | | | |
| | (0.68552) | | | | | |
| Percent Mountainous | −0.00891** | −0.00008 | 0.00051 | 0.00329 | −0.00053 | 0.00723 |
| | 0.00442) | (0.00493) | (0.00525) | (0.00512) | (0.00551) | (0.00498) |
| Noncontiguous | 0.58837*** | 0.34822 | 0.18259 | 0.22396 | 0.25280 | 0.00864 |
| | (0.21840) | (0.27943) | (0.28763) | (0.29319) | (0.29186) | (0.32490) |
| Population 10000s | | 0.0001*** | 0.0001*** | 0.0001*** | 0.0001*** | 0.00004*** |
| | | (0.00001) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Settler Deaths, log | | 0.29633*** | 0.17787* | 0.14135 | 0.20142** | 0.03443 |
| | | (0.08491) | (0.09156) | (0.09124) | (0.09452) | (0.09597) |
| Ethnic Fractionalization | | | 1.02070** | 1.04148** | 1.18730*** | 0.68555 |
| | | | (0.42478) | (0.42250) | (0.44649) | (0.45511) |
| Religious Fractionalization | | | 0.50842 | 0.09047 | 0.77311 | −0.69889 |
| | | | (0.43598) | (0.44243) | (0.48122) | (0.48951) |
| 1940s | | | | 0.76974* | Sub S. A. | 1.45357*** |
| | | | | (0.45784) | | (0.33959) |
| 1950s | | | | 0.87624** | Asia | 1.69398*** |
| | | | | (0.37941) | | (0.33602) |
| 1960s | | | | 0.97925*** | MENA | 1.36601*** |
| | | | | (0.29397) | | (0.36049) |
| 1970s | | | | 0.86489*** | | |
| | | | | (0.29589) | | |
| 1980s | | | | 0.86871*** | | |
| | | | | (0.30075) | | |
| 1990s | | | | 1.31522*** | | |
| | | | | (0.27142) | | |
| Years Since Independence | | | | | 0.00280 | |
| | | | | | (0.00199) | |
| Constant | −3.21428*** | −5.12809*** | −5.30589*** | −5.72483*** | −5.79149*** | −4.96816*** |
| | (0.17023) | (0.48186) | (0.49750) | (0.51789) | (0.60687) | (0.54135) |
| Observations | 6,859 | 5,173 | 5,173 | 5,173 | 5,117 | 5,173 |
| Akaike Inf. Crit. | 1,536.90200 | 1,288.49900 | 1,281.65700 | 1,266.26400 | 1,271.51300 | 1,249.32100 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 3: Protection from Expropriation and Occurrence of Major Civil War

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Occurrence of Major Civil War , countries ind. post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −1.85098*** | | | | | |
| | (0.68430) | | | | | |
| Percent Mountainous | 0.01311*** | 0.04112*** | 0.04134*** | 0.04087*** | 0.04427*** | 0.01579** |
| | (0.00324) | (0.00583) | (0.00596) | (0.00607) | (0.00621) | (0.00728) |
| Noncontiguous | 0.59684*** | 0.87754*** | 0.71827*** | 0.55967** | 0.53112** | 0.10614 |
| | (0.20439) | (0.22124) | (0.23210) | (0.24421) | (0.23757) | (0.23674) |
| Population 10000s | 0.00002*** | 0.00003*** | 0.00003*** | 0.00004*** | 0.00003*** | 0.00002*** |
| | (0.000004) | (0.000005) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Protection from Expropriation | | −0.63405*** | −0.70878*** | −0.73863*** | −0.63879*** | −0.72117*** |
| | | (0.06818) | (0.07651) | (0.07850) | (0.07863) | (0.09795) |
| Ethnic Fractionalization | | | −1.22552*** | −1.22359*** | −1.31744*** | 0.30988 |
| | | | (0.42478) | (0.42250) | (0.44649) | (0.51234) |
| Religious Fractionalization | | | 0.06437 | 0.19758 | −0.33879 | −0.43291 |
| | | | (0.45222) | (0.46196) | (0.46499) | (0.49360) |
| 1940s | | | | 2.18102*** | Sub S. A. | 14.16246 |
| | | | | (0.52591) | | (529.97460) |
| 1950s | | | | 1.05103*** | Asia | 16.04642 |
| | | | | (0.36945) | | (529.97460) |
| 1960s | | | | 0.40582 | MENA | 14.01776 |
| | | | | (0.31597) | | (529.97470) |
| 1970s | | | | 0.51655* | | |
| | | | | (0.29793) | | |
| 1980s | | | | 0.81855*** | | |
| | | | | (0.27733) | | |
| 1990s | | | | 0.81236*** | | |
| | | | | (0.27329) | | |
| Years Since Independence | | | | | −0.00561** | |
| | | | | | (0.00244) | |
| Constant | −2.96206*** | 0.19308 | 1.33458*** | 0.86085 | 1.36146*** | −13.64341 |
| | (0.15369) | (0.36594) | (0.49960) | (0.53676) | (0.49980) | (529.97480) |
| Observations | 3,539 | 2,834 | 2,834 | 2,834 | 2,737 | 2,834 |
| Akaike Inf. Crit. | 1,414.73700 | 1,166.18100 | 1,157.32900 | 1,145.34800 | 1,146.01000 | 1,107.55000 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 4: Settler Deaths and Occurrence of Major Civil War

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Occurrence of Major Civil War, countries ind. post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −1.85098*** | | | | | |
| | (0.68430) | | | | | |
| Percent Mountainous | 0.01311*** | 0.01732*** | 0.02303*** | 0.02250*** | 0.02718*** | 0.01580*** |
| | (0.00324) | (0.00411) | (0.00481) | (0.00487) | (0.00507) | (0.00562) |
| Noncontiguous | 0.59684*** | −0.83185*** | −0.86024*** | −1.05418*** | −0.92311*** | −1.36206*** |
| | (0.20439) | (0.28698) | (0.30410) | (0.32236) | (0.30417) | (0.33933) |
| Population 10000s | 0.00002*** | 0.00002*** | 0.00001*** | 0.00002*** | 0.00002*** | 0.00001** |
| | (0.000004) | (0.000005) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Settler Death, Log | | −0.60441*** | −0.73269*** | −0.73157*** | −0.71621*** | −0.64369*** |
| | | (0.09128) | (0.09975) | (0.10206) | (0.09594) | (0.10800) |
| Ethnic Fractionalization | | | 2.54975*** | 2.59037*** | 2.34886*** | 2.42786*** |
| | | | (0.55228) | (0.55458) | (0.57513) | (0.64439) |
| Religious Fractionalization | | | −1.46285*** | −1.32254*** | −2.17847*** | −1.68174*** |
| | | | (0.44508) | (0.45626) | (0.47137) | (0.51528) |
| 1940s | | | | 1.61806** | Sub S. A. | 15.38355 |
| | | | | (0.65387) | | (523.26920) |
| 1950s | | | | 0.80550** | Asia | 16.17963 |
| | | | | (0.39236) | | (523.26920) |
| 1960s | | | | 0.35309 | MENA | 14.53220 |
| | | | | (0.30387) | | (523.26940) |
| 1970s | | | | 0.13213 | | |
| | | | | (0.29709) | | |
| 1980s | | | | 0.11109 | | |
| | | | | (0.29014) | | |
| 1990s | | | | 0.52705** | | |
| | | | | (0.26629) | | |
| Years Since Independence | | | | | −0.00686*** | |
| | | | | | (0.00200) | |
| Constant | −2.96206*** | −0.12335 | −0.50613 | −0.84840* | 0.05016 | 2,549 |
| | (0.15369) | (0.44419) | (0.46225) | (0.50371) | (0.47926) | (529.97480) |
| Observations | 3,539 | 2,549 | 2,549 | 2,549 | 2,493 | 2,549 |
| Akaike Inf. Crit. | 1,414.73700 | 1,071.31400 | 1,047.72700 | 1,048.73400 | 1,029.44600 | 1,016.78600 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 5: Protection from Expropriation and Occurrence of Minor Civil War

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Occurrence Minor Civil War, Countries Ind. Post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | 0.52689 | | | | | |
| | (0.45708) | | | | | |
| Percent Mountainous | 0.00714*** | 0.01910*** | 0.01352*** | 0.01473*** | 0.01093** | −0.00497 |
| | (0.00248) | (0.00447) | (0.00451) | (0.00453) | (0.00518) | (0.00528) |
| Noncontiguous | 0.53965*** | 0.52519*** | 0.79452*** | 0.97393*** | 0.74437*** | 0.19663 |
| | (0.14980) | (0.16436) | (0.17260) | (0.17649) | (0.18027) | (0.20653) |
| Population 10000s | 0.00004*** | 0.00004*** | 0.00003*** | 0.00003*** | 0.00003*** | 0.00002*** |
| | (0.000005) | (0.000005) | (0.000005) | (0.00001) | (0.000005) | (0.000005) |
| Protection from Expropriation | | −0.03724 | −0.01935 | −0.01027 | −0.01075 | −0.13370** |
| | | (0.04871) | (0.04862) | (0.04882) | (0.05023) | (0.05957) |
| Ethnic Fractionalization | | | 0.25810 | 0.27079 | 0.01479 | 1.49822*** |
| | | | (0.25411) | (0.25463) | (0.25752) | (0.33418) |
| Religious Fractionalization | | | −2.29594*** | −2.51510*** | −2.38455*** | −2.03614*** |
| | | | (0.31476) | (0.31961) | (0.32727) | (0.35816) |
| 1940s | | | | −2.41526** | Sub S. A. | 1.44159 |
| | | | | (1.03337) | | (1.01990) |
| 1950s | | | | −0.77241*** | Asia | 3.18893*** |
| | | | | (0.28851) | | (1.02335) |
| 1960s | | | | −0.69335*** | MENA | 2.53818** |
| | | | | (0.21390) | | (1.02074) |
| 1970s | | | | −0.55462*** | | |
| | | | | (0.19598) | | |
| 1980s | | | | −0.13042 | | |
| | | | | (0.17712) | | |
| 1990s | | | | 0.19426 | | |
| | | | | (0.16782) | | |
| Years Since Independence | | | | | (0.16782) | |
| | | | | | (0.00119) | |
| Constant | −2.42388*** | −2.13410*** | −1.49213*** | −1.29427*** | −1.29411*** | −3.50671*** |
| | (0.11100) | (0.30860) | (0.34952) | (0.36231) | (0.35062) | (1.07683) |
| Observations | 3,539 | 2,834 | 2,834 | 2,834 | 2,737 | 2,834 |
| Akaike Inf. Crit. | 2,479.83700 | 2,065.49300 | 2,008.36700 | 1,980.28400 | 1,977.23300 | 1,954.76700 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 6: Settler Deaths and Occurrence of Minor of Civil War

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Occurrence Minor Civil War, Countries Ind. Post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | 0.52689 | | | | | |
| | (0.45708) | | | | | |
| Percent Mountainous | 0.00714*** | 0.01794*** | 0.02264*** | 0.02457*** | 0.02173*** | 0.02001*** |
| | (0.00248) | (0.00302) | (0.00338) | (0.00344) | (0.00357) | (0.00353) |
| Noncontiguous | 0.53965*** | −0.07778 | 0.11997 | 0.38780* | 0.10637 | −0.17382 |
| | (0.14980) | (0.19299) | (0.20476) | (0.20823) | (0.20504) | (0.23190) |
| Population 10000s | 0.00004*** | 0.00004*** | 0.00003*** | 0.00003*** | 0.00003*** | 0.00003*** |
| | (0.000005) | (0.00001) | (0.00001) | (0.00001) | (0.00001) | (0.00001) |
| Settler Deaths, Log | | −0.15842** | −0.17614*** | −0.19463*** | −0.17938*** | −0.15032* |
| | | (0.06235) | (0.06794) | (0.06786) | (0.06739) | (0.07836) |
| Ethnic Fractionalization | | | 1.29784*** | 1.37679*** | 1.05304*** | 1.19076*** |
| | | | (0.34490) | (0.34829) | (0.35463) | (0.37397) |
| Religious Fractionalization | | | −2.21918*** | −2.51451*** | −2.37456*** | −2.22550*** |
| | | | (0.32120) | (0.32977) | (0.34934) | (0.37613) |
| 1940s | | | | −14.66149 | Sub S. A. | 1.99199* |
| | | | | (328.88040) | | (1.02218) |
| 1950s | | | | −1.31505*** | Asia | 2.39838** |
| | | | | (0.39382) | | (1.02476) |
| 1960s | | | | −0.92577*** | MENA | 1.75511* |
| | | | | (0.24118) | | (1.05028) |
| 1970s | | | | −1.01195*** | | |
| | | | | (0.23415) | | |
| 1980s | | | | −0.37624* | | |
| | | | | (0.19700) | | |
| 1990s | | | | 0.39460** | | |
| | | | | (0.17348) | | |
| Years Since Independence | | | | | −0.00085 | |
| | | | | | (0.00111) | |
| Constant | −2.42388*** | −1.66798*** | −1.51825*** | −1.12592*** | −1.21386*** | −3.54785*** |
| | (0.11100) | (0.33522) | (0.34290) | (0.35906) | (0.36794) | (1.08672) |
| Observations | 3,539 | 2,549 | 2,549 | 2,549 | 2,493 | 2,549 |
| Akaike Inf. Crit. | 2,479.83700 | 1,738.81900 | 1,693.13200 | 1,628.18800 | 1,677.37000 | 1,682.56700 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 7: Random Effects Model, Settler Deaths, Onset Post-1945 Data

| | *Dependent variable:* | | | | | |
|---|---|---|---|---|---|---|
| | Onset of Civil War, Countries Ind. Post 1945 | | | | | |
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Latitude | −0.08544 | | | | | |
| | (0.06282) | | | | | |
| Percent Mountainous | 0.00018 | 0.00057 | 0.00087* | 0.00088** | 0.00082 | 0.00083 |
| | (0.00035) | (0.00048) | (0.00048) | (0.00043) | (0.00050) | (0.00051) |
| Noncontiguous | 0.03175 | 0.00221 | 0.00605 | 0.01359 | 0.00665 | −0.00742 |
| | (0.02063) | (0.02461) | (0.02451) | (0.02281) | (0.02521) | (0.02914) |
| Population 10000s | | 0.000004*** | 0.000003** | 0.000003** | 0.000003** | 0.000003** |
| | | (0.000001) | (0.000001) | (0.000001) | (0.000001) | (0.000001) |
| Settler Deaths, Log | | 0.00042 | −0.00713 | −0.00561 | −0.00688 | −0.00834 |
| | | (0.00772) | (0.00828) | (0.00741) | (0.00854) | (0.00965) |
| Ethnic Fractionalization | | | 0.09229** | 0.08893** | 0.09096** | 0.08963* |
| | | | (0.03981) | (0.03545) | (0.04200) | (0.04716) |
| Religious Fractionalization | | | −0.07380* | −0.07402* | −0.07015 | −0.09061* |
| | | | (0.04208) | (0.03782) | (0.04552) | (0.05158) |
| 1940s | | | | 0.04468 | Sub S. A. | 0.01288 |
| | | | | (0.05630) | | (0.04056) |
| 1950s | | | | −0.01913 | Asia | 0.02905 |
| | | | | (0.02574) | | (0.04344) |
| 1960s | | | | −0.01965 | MENA | −0.01675 |
| | | | | (0.01478) | | (0.05304) |
| 1970s | | | | −0.01679 | | |
| | | | | (0.01387) | | |
| 1980s | | | | −0.02241 | | |
| | | | | (0.01397) | | |
| 1990s | | | | 0.02240 | | |
| | | | | (0.01428) | | |
| Years Since Independence | | | | | 0.00006 | |
| | | | | | (0.00017) | |
| Constant | 0.05763*** | 0.03722 | 0.04925 | 0.04955 | 0.04586 | 0.05528 |
| | (0.01401) | (0.04291) | (0.04386) | (0.04035) | (0.04994) | (0.06378) |
| Observations | 3,043 | 2,190 | 2,190 | 2,190 | 2,134 | 2,190 |
| $R^2$ | 0.00537 | 0.00838 | 0.01136 | 0.01932 | 0.01115 | 0.01149 |
| Adjusted $R^2$ | 0.00438 | 0.00656 | 0.00865 | 0.01391 | 0.00790 | 0.00741 |

*Note:* *p<0.1; **p<0.05; ***p<0.01
Sub S. A. = Sub-Sahara Africa

Table 8: Model 7

| | *Dependent variable:* | |
|---|---|---|
| | Onset of Civil War, countries ind post 1945 | |
| | Expropriation | Settler Death |
| | (1) | (2) |
| Percent Mountainous | 0.00985 | 0.01909*** |
| | (0.00927) | (0.00586) |
| Noncontiguous | 1.44257*** | 0.62194* |
| | (0.33008) | (0.33486) |
| Population 10000s | 0.00004** | 0.00003* |
| | (0.00002) | (0.00002) |
| Protection from Expropriation | −0.37224*** | |
| | (0.08978) | |
| Settler Deaths, Log | | −0.02238 |
| | | (0.10800) |
| Ethnic Fractionalization | 0.78010 | 1.63736*** |
| | (0.52312) | (0.59411) |
| Religious Fractionalization | −1.24786** | −1.77415*** |
| | (0.55561) | (0.53993) |
| PolityII | 0.02424 | 0.01620 |
| | (0.01854) | (0.01888) |
| Instability | 0.65191** | 0.76086*** |
| | (0.26101) | (0.24553) |
| Energy | −0.000003 | −0.000003 |
| | (0.000004) | (0.000004) |
| Constant | −1.29250** | −3.64753*** |
| | (0.64521) | (0.58483) |
| Observations | 2,281 | 2,103 |
| Akaike Inf. Crit. | 761.58190 | 792.23980 |
| *Note:* | | *p<0.1; **p<0.05; ***p<0.01 |

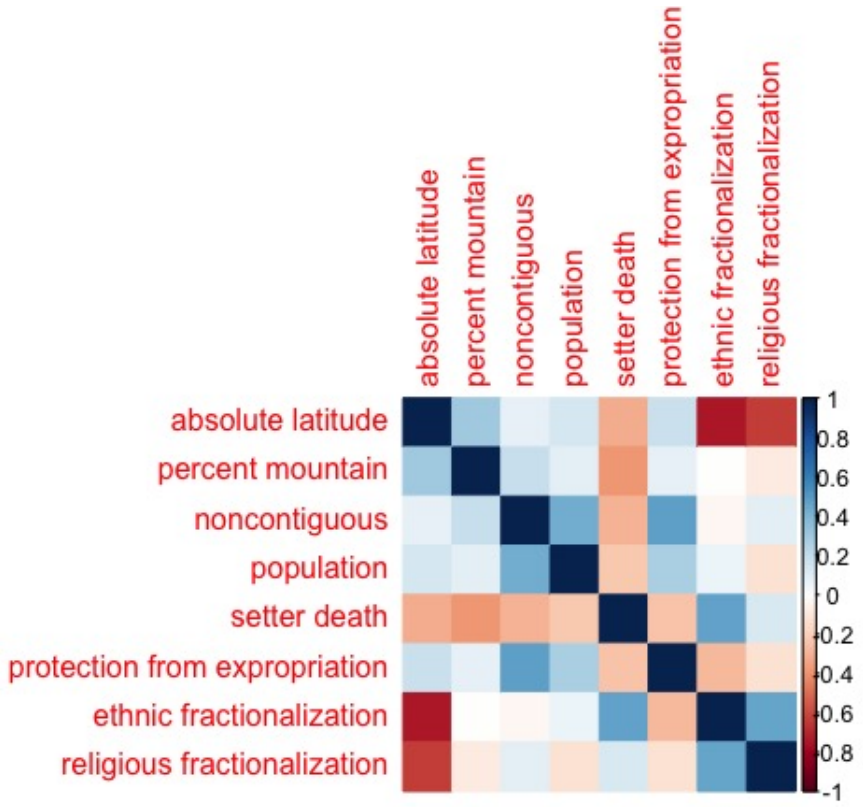



Figure 1: Correlation Matrix

| | cname | logem4 | avexpr | year_civil_war | binary_civil_war |
|---|---|---|---|---|---|
| 1 | BURMA | 3.543854 | 5.772727 | 64 | 1 |
| 2 | INDIA | 3.884241 | 8.272727 | 52 | 1 |
| 3 | INDONESI | 5.135798 | 7.590909 | 36 | 1 |
| 4 | ISRAEL | *NA* | 8.545455 | 62 | 1 |
| 5 | PHILIPPI | *NA* | 5.454545 | 52 | 1 |
| 6 | SUDAN | 4.479607 | 4.000000 | 39 | 1 |

Figure 2: Countries w/ Highest Number of Civil War Years

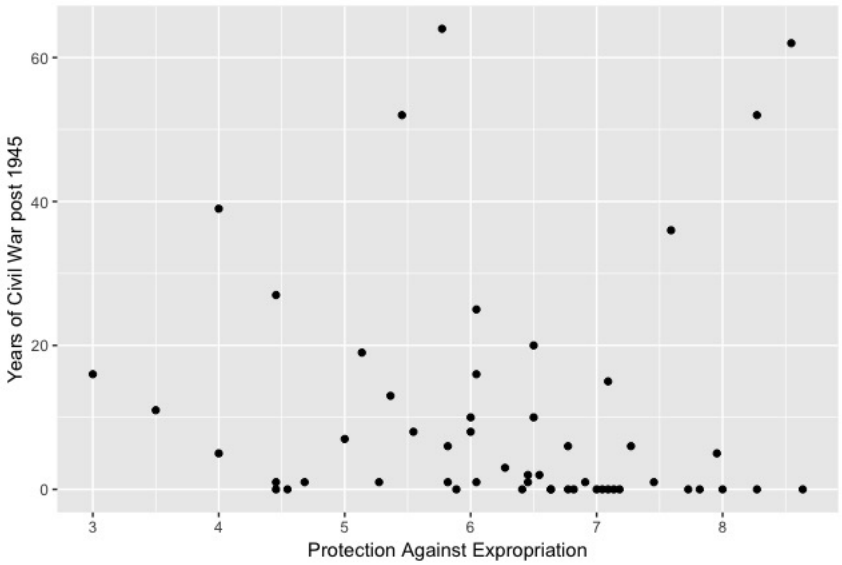



Figure 3: Protection from Expropriation vs. Years of Civil War

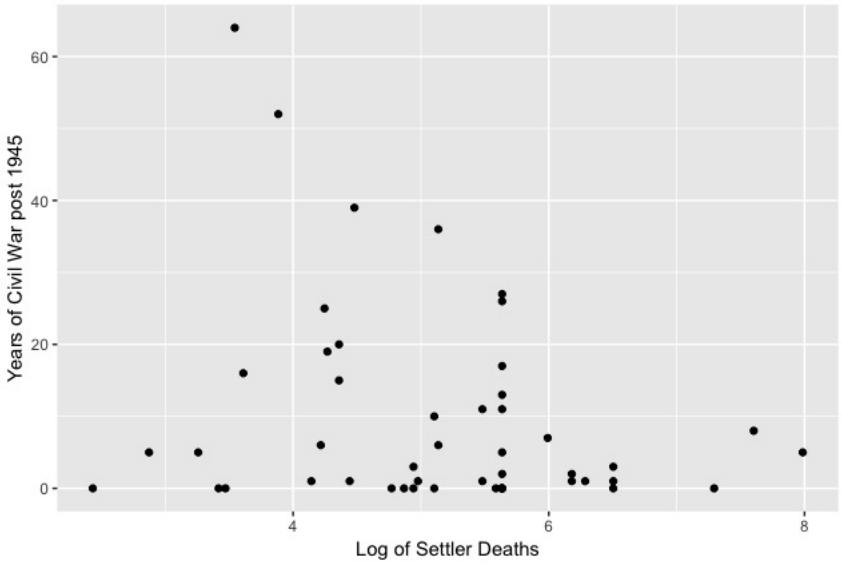
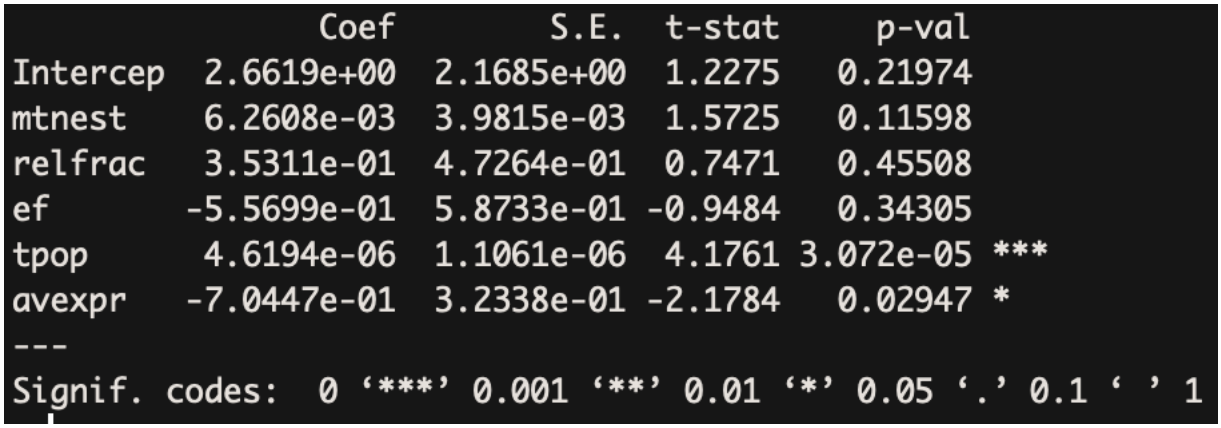



Figure 4: Settler Deaths vs. Years of Civil War



| | Coef | S.E. | t-stat | p-val | |
|---|---|---|---|---|---|
| Intercep | 2.6619e+00 | 2.1685e+00 | 1.2275 | 0.21974 | |
| mtnest | 6.2608e-03 | 3.9815e-03 | 1.5725 | 0.11598 | |
| relfrac | 3.5311e-01 | 4.7264e-01 | 0.7471 | 0.45508 | |
| ef | -5.5699e-01 | 5.8733e-01 | -0.9484 | 0.34305 | |
| tpop | 4.6194e-06 | 1.1061e-06 | 4.1761 | 3.072e-05 | *** |
| avexpr | -7.0447e-01 | 3.2338e-01 | -2.1784 | 0.02947 | * |

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Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Figure 5: Instrumental Variable Model

*Instrumental Model*

As noted above, the instrumental approach that Acemoglu, Johnson and Robinson took was not used in this thesis as the effects of settler deaths on civil war could be seen through more variables than protection from expropriation. However, given there is a precedent for such modeling, an instrumental model was created. Due to the availability of data on settler deaths and for reasoning that the effects of settler deaths could be seen through many other variables besides protection from expropriation, latitude was chosen as the instrumental variable. The logic is that latitude affects climate and disease which would then affect how well a colonizing force would be able to settle an area and would therefore also affect what institutions are created. When using latitude as an instrumental variable, the model again creates a negative and statistically significant coefficient for protection from expropriation.