Evaluating the Motivation and Feasibility Theory in Predicting the Onset and Severity of Civil Conflict

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Abstract

This paper looks at 187 countries from 1960-2004 and explores the economic indicators of the onset and the severity of civil conflicts, where civil conflicts are described as small clashes that result in 25 or more battle deaths per conflict. For conflict onset, I test a model that uses the Motivation Theory to predict when a conflict will begin while for conflict severity, I test a model that uses the Feasibility Theory to predict how severe a conflict will become. In the final section, I reverse the models and test the ability of the Motivation Theory to predict conflict severity and the ability of the Feasibility Theory to predict conflict onset. I find that the Motivation Theory performs better at predicting both conflict onset and severity.

JEL Classification: F51; F52; O57

Keywords: Conflict; International Security; Peace; Motivation; Feasibility

Introduction

In the second half of the twentieth century, over 16.2 million people were killed in 127 large-scale civil wars. Many of the poorest nations in the world were horribly affected, and countries such as Afghanistan continue to remind the international community of the long-lasting effects of civil conflict (Fearon and Laitin 2003). More recently, conflicts in Libya, Syria, and Egypt serve as examples that civil conflict is not an outdated phenomenon. In Syria, for example, over 70,000 people are estimated to have died in conflict, and thousands more have been tortured and injured. Besides simply battle-deaths, civil conflict also often results in starvation, disease, and extreme population displacement. Over 1 million Syrians have been displaced, resulting in economic unrest and increased pressure on limited food and water supplies in neighboring countries (Economist 2013). With these kinds of numbers, it is imperative that scholars continue to explore not only the causes of civil conflict, but also what causes smaller battles to develop into severe, full-scale civil wars.

In the past, most academic work has focused on interstate wars—World War I and World War II understandably drove conflict research for decades. However, after World War II, as the number of interstate wars declined and civil war became the most common form of conflict, research too began to slowly shift towards intrastate war. The majority of academic work has focused on the onset of large-scale civil wars that have resulted in 1,000 or more battle deaths per conflict and has largely neglected smaller civil conflicts. However, civil conflicts of all sizes have far-reaching consequences. Even small conflicts can result in the destabilization of a country's infrastructure and political system. Additionally, smaller conflicts are indicative of the overall economic, social, and political health of a nation and may be predictors of larger civil wars.

In this paper, I explore the economic indicators of the onset and the severity of civil conflicts, where civil conflicts are described as smaller clashes that result in 25 or more battle deaths per conflict. Table 1 shows the list of the 60 countries that have engaged in civil conflict from 1960 to 2004 (See Appendix I for more detailed list). Research in this field has not looked at the onset of smaller civil conflicts, and even less work has been done focusing on the variation in severity of civil conflicts. This paper addresses both of these gaps, and finds that although economic and political theories do not seem to accurately predict the severity of civil conflict, they do seem to accurately predict the onset of civil conflict.

This paper will first review the Feasibility Theory and the Motivation theory, two of the most prominent theories in the field of conflict research. Next, I will analyze the Motivation Theory and its ability to predict the determinants of conflict onset. In this section, I will discuss empirical specifications, results, and significance. Then, I will analyze the ability of the Feasibility Theory to predict the severity of civil conflict and discuss empirical specifications, results, and significance. Next, I switch the models in order to test the ability of the Feasibility Theory to predict the onset of civil conflict and the ability of the Motivation Theory to predict the severity of civil conflict. Finally, the paper concludes by talking about areas of concern and recommendations for future research.

Table 1- List of Countries that have had Civil Conflicts From 1960-2004

Afghanistan	Egypt	Malaysia	Somalia
Algeria	El Salvador	Mauritania	South Africa
Angola	Ethiopia	Mexico	Spain
Argentina	Ghana	Morocco	Sri Lanka
Bangladesh	Guatemala	Mozambique	Sudan
Bolivia	India	Nicaragua	Surinam
Burkina Faso	Indonesia	Nigeria	Syria
Burundi	Iran	Oman	Thailand
Cameroon	Iraq	Pakistan	Tunisia
Chad	Israel	Paraguay	Turkey
Chile	Kenya	Peru	Uganda
Colombia	Laos	Philippines	United Kingdom
Comoros	Lebanon	Romania	Uruguay
Congo	Liberia	Rwanda	Venezuela
Dominican Republic	Madagascar	Senegal	Zimbabwe

Background Literature

Since the end of World War II, civil conflict has become the dominant form of conflict around the world. Between 1945 and 1999, roughly 16.2 million people died in roughly 122 civil wars, more than five times the amount that died in interstate wars during the same period (Fearon and Laitin 2003). With this rise in civil conflict, new theories about the onset of crises have also emerged. Both political science and economics have formed their own theories—political scientists have developed the Motivation Theory by looking at how political, social, and economic grievances result in war, while economists have developed the Feasibility Theory by studying how cost-benefit analyses and resource allocation lead to the onset of civil war.

Political science originally began studying the onset of civil conflict by building the Motivation Theory to look at economic grievances as the root cause of conflict. Using data from various uprisings including the Russian Revolution and the Egyptian Revolution, James Davies first found that conflict is more likely to occur after a period of economic and social advancement is followed by a sharp reversal of development. Unexpected changes in quality of life and the return to a more impoverished lifestyle incite frustration and disappointment (Davies 1962). Davies argued that conflict is not only a consequence of absolute poverty, but also a consequence of relative poverty—feeling economically and socially inferior when compared with others or compared with yourself during a previous point in time. Based on his analysis, variables measuring poverty and inequality were shown to be correlated with the onset of conflict.

Stewart developed the Motivation Theory from another perspective by using ethnic and socio-economic motives to explain how differences between groups of people lead to the onset of civil war (Stewart 2001). She argued that nations have groups of people with different religions, languages, and ethnicities, and that some of these "identity groups" are much more politically,

socially, and economically affluent than others. Using a theoretical approach, Stewart found that incompatibilities between identity groups are magnified when there is unequal distribution of wealth, power, and resources. Poverty and inequality often spark conflict, particularly when one group believes that there is power and wealth to be gained by engaging in conflict.

Walter changed the focus of the Motivation Theory by arguing that conflict was not only a result of grievances, but also a result of an "absence of nonviolent means for achieving change" (Blattman and Miguel 2010, p.15, Walter 2004). She analyzed 58 civil wars from 1945 to 1996 and found that poverty and inequality are not the only predictors of conflict— many countries with high poverty rates never experience any type of conflict. Instead, she demonstrated that people are motivated to rebel not only when they are impoverished, but also when there is a lack of democracy and political freedom. Countries with open political systems where the citizens can voice their opinions provide nonviolent opportunities for producing change, which decreases the probability of civil war (Walter 2004).

While political science has focused primarily on grievances, poverty and inequality, economics has looked at the onset of civil conflict by developing the Feasibility Theory to analyze and maximize various parties' utility functions given certain constraints. Grossman originally modeled various equilibriums given certain income constraints and looked at the choices of an incumbent ruler, the insurgent leader, and the peasant who served as potential recruits (1995). He analyzed each group's expected income based on different scenarios (during rebellion and peacetime) and found that for rebellion to occur, the fraction of the income that the rebels expect to capture must be significantly larger than the amount of income they expect to lose. Or, put another way, participation in rebellion rises as the opportunity costs of participating falls and conflict becomes more financially appealing.

Hirschlefier also built on the Feasibility Theory by using constrained models and theories of asymmetric advantages to analyze when parties decide to engage in conflict and when they decide to compromise. He observed that violence is a product of "preferences, opportunities and perceptions" (1995, p.172). Divergent preferences, combined with opportunities and perceptions that the chance of "winning" is high, ultimately resulted in conflict. He explained that the chance of "winning" increases with the quality and quantity of one side's technology, with technology being defined broadly as anything from weaponry to strategic leadership. Hirschlefier concluded that the perception, opportunity, and opportunity costs are all weighed very logically by each group of actors when making a cost-benefit analysis about the feasibility of waging war (1995).

Most recently, Collier ignited debate and interest in this field by further developing the Feasibility Theory by focusing on the financial and military cost of warfare (Collier et al 2009). The authors proposed the feasibility hypothesis, that "where rebellion is materially feasible it will occur without reference to motivation" (Collier et al. 2009, p.2). They argued that wars are long, dangerous, extremely expensive, and will not occur unless they are financially and militarily feasible. For example, the Tamil Tigers, a small rebel group in northern Sri Lanka, spends between $200 and $350 million a year, which is between 20 and 34 percent of the GDP of Northeast Sri Lanka, the area under Tamil Tiger control. With these kinds of costs, the authors argued that waging war is not a function of motivation and grievances, but rather a function of opportunity costs, cost-benefit analyses, and financial feasibility, which are all taken into account before rebel organizations decide to engage in conflict. Using an empirical approach, Collier et al looked at the onset of 84 civil wars between 1965 and 2004 and found that the variables linked to financial feasibility, such as dependence on primary commodities, were significant, while social and ethnic grievances were negatively correlated with the onset of civil war (2009).

Over the years, political science has developed the Motivation Theory based on grievances and inequality while economics has developed the Feasibility Theory based on opportunity costs and financial feasibility. Both theories have focused on researching the onset of civil war. However, very little research has been done looking at the onset of civil conflicts, and even less has focused on the severity of civil conflicts. This paper attempts to fix these gaps in the literature in two different ways:

1) by analyzing the onset of civil conflicts instead of civil wars (defined as 25 battle deaths per conflict and 1,000 battle deaths per conflict, respectively).
2) by analyzing the severity of civil conflicts (using battle deaths as a measure of severity).

Data and Methodology

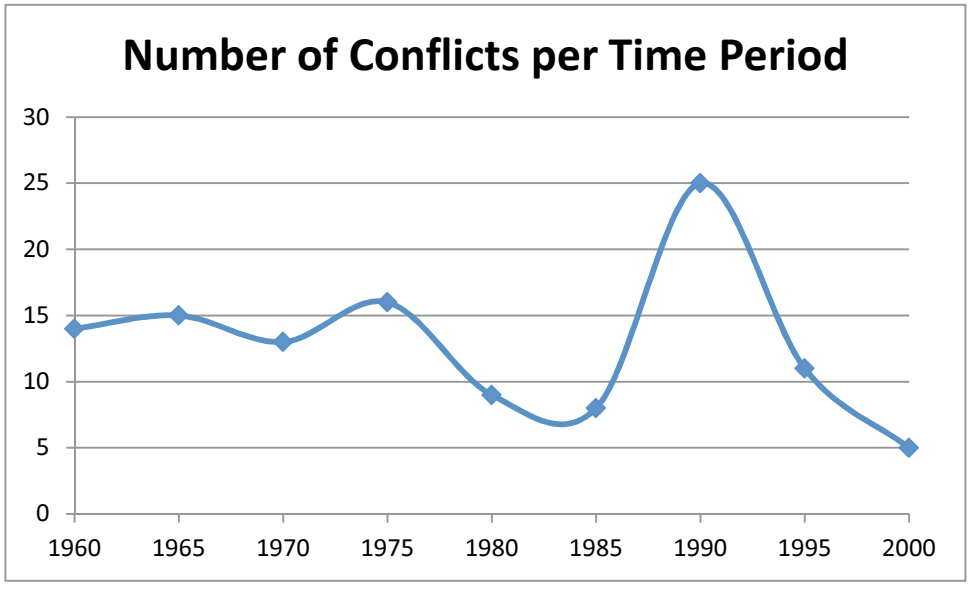
To analyze the onset and severity of civil conflict, I look at all the cases of civil conflict from 1960 to 2004, where civil conflict is defined as a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which one is the government of a state and the other is an internal party, results in at least 25 battle-related deaths with battle-deaths being defined as "deaths during combat and deaths from wounds received in combat" (Lacina and Gleditsch 2005, p.2). The main source of data for both the conflict onset and the severity analysis is the Bethany Lacina and Nils Peter Gleditsch Battle-Deaths dataset. Although there are many battle-death datasets, Lacina and Gleditsch have surveyed all previous datasets, consulted regional experts, researched government and media sources, and use a violence threshold of 25 deaths per year, which has allowed analysis of not only civil wars, but also episodes and smaller civil conflicts.

Looking more closely at the data, there is a large variety in the types of civil conflicts—the average number of battle deaths for all civil conflicts is 21,019 and the median number of battle deaths is 1,025, indicating the diversity in the severity of conflict and the fact that there are a few, very large conflicts. Many of the largest conflicts are in Afghanistan—the country has had 644,842 total battle deaths, the most of any country in the world. In comparison, Gabon and Trinidad and Tobago have only had a total of 25 battle deaths over the 44 year time period. The durations of each conflict also varies incredibly—from a 45-year civil war in Colombia to a few month conflict in Djibouti. This paper looks at all of these different types of conflicts and attempts to find trends that govern the onset and severity of civil conflict

Onset

To analyze the onset of civil conflict, I test a model that uses the Motivation Theory to predict when a conflict would begin. The dataset includes 187 countries over nine five-year time periods, where the first time period is from 1960-1964 and the last time period is from 2000-2004. There is an average of 12.78 conflicts per time period, with a spike in conflict onset between 1990-1994 because of conflicts in many countries such as Egypt and Moldova that had never before engaged in civil conflict (See Graph 1). For each country, if a conflict began during a five-year period, the binary dependent variable is coded as a 1, otherwise it is coded as a 0. Although each conflict is often made up of several independent episodes, only the first year of the first episode of the conflict is used for the onset analysis because of reasons of endogeneity. Countries that have never engaged in conflict serve as effective controls for countries that have engaged in civil conflict.

Graph 1- Total Number of Conflicts per 5-Year Period



For the independent variables, I draw on the political science theories and hypothesize that for a conflict to begin, there must be sufficient motivation. Walter notes that for conflict to occur, farmers, shopkeepers, and workers must choose to enlist in an army or rebellious organization. "Enlistment is only likely to be attractive when two conditions hold. The first is a situation of individual hardship or severe dissatisfaction…the second is the absence of any nonviolent means for change" (Walter 2004, p.371). I predict that a crisis will begin when there is both extreme dissatisfaction amongst the population and an inability to improve the situation. Accordingly, I use three variables to proxy the level of relative dissatisfaction and three variables to proxy the opportunities for change and improvement.

The level of GDP per capita and the growth rate of GDP per capita serve as effective proxies for extreme dissatisfaction because they capture the effects of both absolute and relative deprivation. Poverty increases the severity of hardship and a negative growth rate of per capita income adds to the feeling that "things are simply getting worse." The frustration, despair, and deterioration of quality of life that accompanies a reversal in the growth rate of GDP per capita may be enough to convince potential recruits that violence may be necessary for change. Based on the Motivation Theory, both increases in the level and the growth rate of GDP per capita should lower the chances of civil conflict. I use the Penn World Tables for the data on GDP per capita (PPP converted at current prices in International dollars) because their data is denominated in a common set of prices and currency in order to facilitate comparisons between countries and over time. The data for the growth rate was assembled by log transforming the per capita data and then subtracting year t-5 from year t. The growth rate of GDP per capita is measured over the five-year period preceding the period that conflict began while the level of per capita income is measured at the beginning of the five-year period that the conflict began. Because the level of per capita income

ranges widely from $120.54 to $51,534.15, I log transform the level data in order to reduce heteroskedasticity and the effect of outliers.

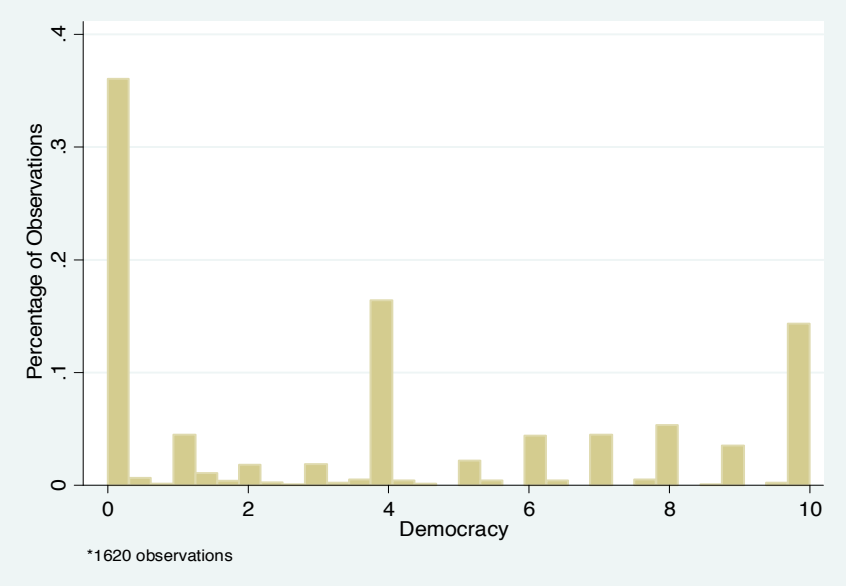
The third variable that proxies for extreme dissatisfaction is ethnic fractionalization. Out of the 709 ethnic groups identified around the world, at least 100 have engaged in some type of conflict from 1945 to 1998 (Fearon 2004). Based on Stewart's research, ethnic fractionalization increases the probability of conflict onset, especially if some ethnic groups are more economically, politically, and socially disadvantaged than others (2001). The data was acquired from the Ethnolinguistic Fractionalization Index (ELF), a dataset originally compiled by Alberto Alesina and his colleagues (Alesina et al 2003). The index is interpreted as the probability that two randomly selected individuals in a population belong to different ethnic groups. This probability reaches as high as 92.5%, which is the index for Tanzania from 1970-2004.

Next, in order to proxy for motivation and the lack of nonviolent opportunities for change, I use the level of violence in neighboring countries, the percentage of the population enrolled in secondary education, and the degree of political freedom. Recent violence during the Arab Spring reflects how violence in one country motivates conflict in neighboring countries as rebel groups are inspired and encouraged. Although this variable has not previously been used in the literature, it may be able to capture the "spillover" effects of conflict. The data was obtained from the Center of Systemic Peace's Major Episodes of Political Violence 1946-2008 dataset (Marshall 2010). For each year, the score for each country is measured as the sum of the violence scores on a 0 to 10 scale of each country's neighboring countries. A violence score of 0 indicates that a particular country is bordered only by peaceful nations. This variable is averaged over the five-year period preceding the period that conflict began for reasons of endogeneity and to capture the level of violence/tension in the region.

The percentage of the population enrolled in secondary education also serves as a proxy for nonviolent opportunities for change. Secondary education provides opportunities to work, travel, and earn a living, making violence a less attractive option to improve your standard of living. This indicates that secondary education should negatively affect enlistment in rebel organizations and decrease the probability of conflict onset. This variable was constructed using World Bank data by dividing the number of pupils enrolled in secondary education by the country's population at that time. Although youth unemployment may have been a better measure of opportunity (or lack thereof), the poor quality of unemployment data necessitates the use of secondary education data. The variable is calculated at the beginning of the five-year period that conflict began.

The final variable that serves as a proxy for nonviolent opportunities for change is democracy, or the degree of political freedom. Although it may seem that democracy would be negatively correlated with conflict, Hegre et al's research indicates that the relationship may be more complicated (2001). The authors modeled civil war, given a certain level of grievance caused by political instability and regime type, and found that semidemocracies are most prone to conflict. Because semidemocracies are partly democratic and partly authoritarian, repression of the populations leads to grievances while the political freedom allows organizations to form and rebel. Looking at Graph 2, the data also seems to indicate a non-linear relationship. Thus, I include both a linear and a squared term in the onset model in order to capture the effect of semidemocracies. The democracy data was obtained from the Polity IV dataset, a political dataset compiled by the Center for Systemic Peace (Marshall 2011). The scores range from 0 to 10, with 10 being a score for the most democratic countries, such as the United Kingdom and the United States. Because the score often remains relatively constant over a five-year period, the democracy variable is averaged over the five-year period preceding the period that conflict began.

Graph 2- Distribution of the Democracy Data



Because there are so many different types of conflicts in so many different countries, I control for population and region. The fact that countries with vastly different populations may have the same number of battle deaths indicates that controlling for population will allow us to compare the onset of conflicts without the influence of severity. Also, because regions are inherently different, controlling for them allows us to test the effects of the indicators on the onset of conflict without the influence of cultural or historical factors.

Table 2 succinctly summarizes the variables and their expected signs as predicted by the Motivation Theory. When analyzing the results, comparing the empirical signs of these variables to the theoretical ones outlined in Table 2 will demonstrate whether or the Motivation Theory is able to outline the mechanisms by which conflict begins.

Table 2- Expected Signs Based on the Motivation Theory

Independent Variables	Expected Sign
Growth Rate of GDP Per Capita	-
Ln(GDP Per Capita)	-
Secondary Education	-
Democracy	+
Democracy^2	-
Neighboring Violence	+
Ethnic Fractionalization	+
Population, Regional Dummies	Control

In order to evaluate this model, I use the following regression equation:

Equation 1

$$Y_C = \beta_0 + \beta_G G_{it-1} + \beta_N N_{it-1} + \beta_S S_i + \beta_Y lnY_i + \beta_D D_{it-1} + \beta_{D2} D^2_{it-1} + \beta_E E_i + \beta_P P_i + \beta_R R_i + \upsilon_i$$

where Y_C is the binary dependent variable for whether conflict has started. The variables used to test the Motivation Theory are G_i, the growth rate of GDP per capita, N_i, the average level of violence amongst neighboring countries, S_i, the percentage of the population enrolled in secondary education, Y_i, GDP per capita, D_i, the average democracy score, D^2_i, the average democracy score squared, and E_i, the ethnic fractionalization index. The control variables are P_i, the population, and R_i, the region dummies for Europe, Africa, Asia, North/South America, and the Middle East.

Results

The results from the first set of regressions are displayed in Table 3. Because per capita income, democracy, and secondary education are all highly correlated (see Table 4), they are not all included in the same regressions. In Table 3, Regression 1 and 2 include per capita income, but not secondary education or democracy. This gives us a sample of 677 observations in Regression 1 with

49 observations of conflict and 628 observations of peace. Regression 2 includes a sample of 764 observations, 49 of which are conflict observations.

Regressions 3 and 4 include the percentage of the population enrolled in secondary education variable, but not the per capita income or democracy variables. Again, we see that both Regression 3 and 4 have 49 war observations, with 627 peaceful observations in Regression 3 and 714 peaceful observation sin Regression 4. Regression 5 and 6 include the democracy variable, but do not include the GDP per capita or the secondary education variable. Regressions 5 and 6 have 666 and 748 observations, respectively, 48 of which are conflict observations. The odd-numbered regressions are the base-line regressions with all the variables listed in Equation 1, and the even-numbered regressions remove any variables that are highly insignificant. Removing the insignificant variables often changes the significance of other variables and thus provides a better-fitted model. . The results from Table 3 support some elements of our hypothesis that the onset of conflict is determined by grievances and motivation.

Table 3- Onset Logit Regression Marginal Coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP Per Capita Growth t-1	-.040 (-1.12)	-.032 (-1.09)	-.046 (-1.18)	-.037 (-1.16)	-.031 (-.81)	-.030 (-.93)
Average Democracy Score t-1	-	-	-	-	.011 (1.27)	.006 (.77)
(Average Democracy Score)^2 t-1	-	-	-	-	-.002 (-1.68)*	-.001 (-1.24)
Secondary Education	-	-	-.781 (-2.30)**	-.651 (-2.91)***	-	-
Ln GDP Per Capita	-.027 (-3.29)***	-.020 (-3.57)***	-	-	-	-
Average Neighbor Violence	-7.93e-4 (-.42)	-	-4.31e-4 (-.22)	-	-6.84e-4 (-.35)	-
Ethnic Fractionalization	.060 (1.60)	.030 (1.13)	.061 (1.54)	.038 (1.36)	.059 (1.49)	.058 (2.14)**
Ln Population	.010 (1.65)*	.010 (2.73)***	.010 (1.69)*	.012 (3.11)***	.012 (1.87)*	.014 (3.61)***
America Dummy	.024 (.60)	-	.026 (.59)	-	.031 (.70)	-
Middle East Dummy	.037 (.61)	-	.045 (.68)	-	.025 (.45)	-
Asia Dummy	-.002 (-.06)	-	.026 (.55)	-	.032 (.65)	-
Africa Dummy	-.012 (.-.34)	-	.004 (.10)	-	.026 (.59)	-
N	677	764	676	763	666	748
Pseudo R^2	**.0747**	**.0923**	**.0620**	**.0817**	**.0593**	**.0725**

*Note: The binary dependent variable is the onset of conflict in a 5-year period. All regressions include a constant. Values in parenthesis are t-statistics and the numbers above are marginals. *** p< .01, **p< .05, *p< .10. Coefficients can be found in the appendix.*

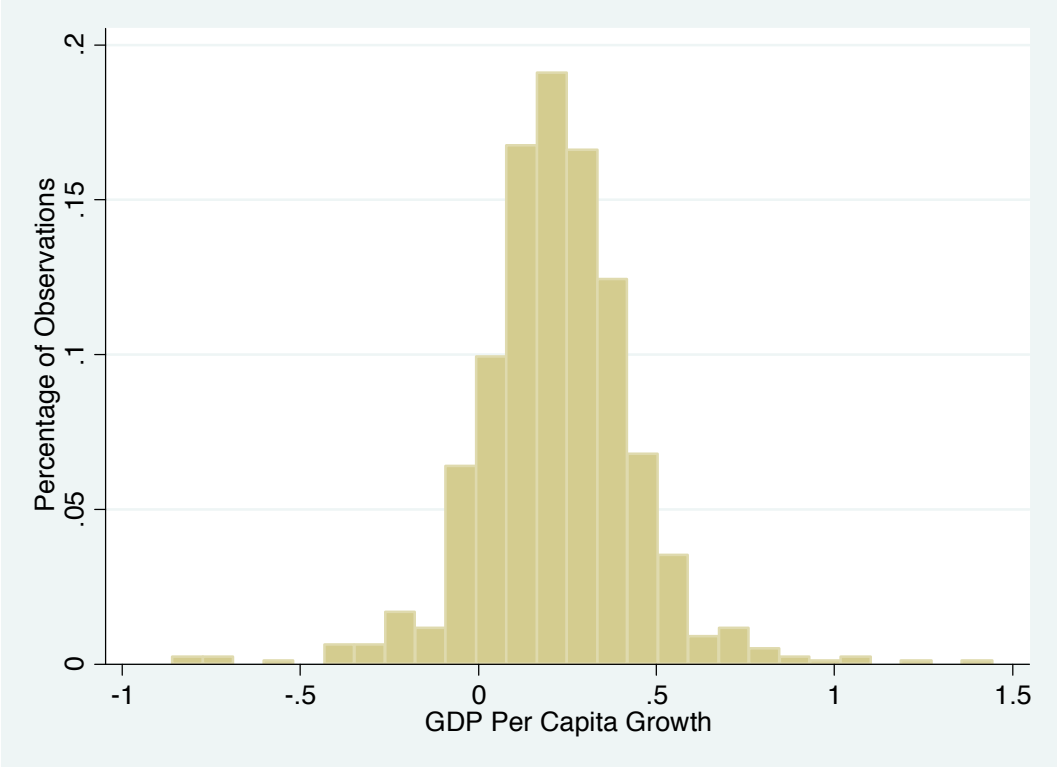
Table 4- Correlation Matrix

	lnGDP	Sec_Educ	Democ
lnGDP	-		
Sec_Educ	0.6551	-	
Democ	0.5923	0.4327	-

The negative sign and significance at the 99% level in both Regression 1 and Regression 2 indicate that GDP per capita is a strong predictor of conflict onset. These findings support Walter's hypothesis that poverty and extreme are strong motivators for enlistment and recruitment (2004). Looking at Table 2, the mean of ln (GDP per capita) is 7.774. Increasing that by one percentage point gives us 8.774. Taking the inverse log of both 7.774 and 8.884, gives us the interpretation that increasing the per capita income of a nation from $2377 to $6462 decreases the probability of civil conflict between 2 and 2.7 percentage points. Although this is not a large decrease in the probability of conflict, because the effect is so significant, we can have a high degree of confidence in the results. Research on conflict onset has also almost consistently found per capita income to be negative and significant, further supporting these results.

The second proxy for extreme hardship, the growth rate of GDP per capita, is not significant, but is consistently negative across all six regressions. This indicates that the absolutely level of deprivation may be a better predictor of conflict onset than the relative level of deprivation. The correlation of -.051 between conflict onset and the growth rate provides support for the negative sign on the coefficient, and the distribution of the data in Graph 3 demonstrates that there are no outlier that could have skewed the results. The variable may simply not be significant because the growth rate is measured in the five-year period prior to the five-year period when conflict began. This may be too far back which may explain why the growth rate is not significant in any of the regressions.

Graph 3- Distribution of the Growth Rate of GDP per Capita



The final proxy for extreme dissatisfaction is the degree of ethnic fractionalization, which is positive across all six regressions, and significant in the 6th regression. This supports Stewart's theory that incompatibilities between various ethnic groups can spark conflict (2001). The fact that per capita income is so significant in Regressions 1 and 2 further supports the theory that conflict is particularly likely when one identity group is more economically advantaged than another because the lack of social, political, and economic power that comes with an identity group, not the identity group itself, is the grievance.

Secondary education, a proxy for nonviolent opportunities for change, performs similarly to the level of per capita income and is negative and significant in regression 3 and 4. Doubling the percentage of population enrolled from .0652 to .1304 reduces the probability of conflict between 4.23 and 5.08 percentage points (from Regression 4 and 3, respectively). Because increasing the

mean of the percentage of the population enrolled in secondary education by one percentage point from .0652 to 1.0652, results in a decrease of the probability of conflict onset by 78.1 percentage points in Regression 3 and 65.1 percentage points in Regression 4, doubling the percentage of the population enrolled in secondary education from .0652 to .1304 decreases the probability of conflict onset by 4.23 percentage points in Regression 4 and 5.08 percentage points in Regression 3. The effect of secondary education is significant and supports the hypothesis that secondary education provides individuals with education and work opportunities, increasing the opportunity cost of going to war and providing people with alternate methods to change their standard of living.

We see a similar story in Regression 5 and 6 when looking at democracy. Although the linear and squared term are not jointly significant in either regression, the significance of the quadratic term in regression five indicates the importance of the variable and that the quadratic model better fits the data. I differentiate Equation 1, with respect to democracy, and solve for the critical point in order to find when conflict is more likely. In accordance with Hegre et al's research, I find that semidemocracies are more prone to conflict and that conflict is most likely with a democracy score between 2.75 and 3 (2001). Countries that are autocratic, but not complete authoritarian dictatorships, cause frustration but also provide opportunities for rebels to organize and rebel. Countries that are democratic provide democratic ways for individuals to voice frustrations and produce change while completely authoritarian governments intimidate rebel organizations and do not provide opportunities for rebels to meet and recruit. However, a score of 2.75-3 is still mostly authoritarian indicating that political freedom, on average, reduces the probability of conflict. Although the correlation between democracy and conflict onset is -.0897, if you only look at countries with a democracy score of 5 or above, the correlation between democracy and conflict becomes -.1405, supporting our findings and the Motivation Theory.

Although the final proxy for motivation, the average level of violence in neighboring countries, is negative, it is not significant in any of the six regressions. The 95% confidence interval for the marginal coefficients is between -.004 and .003, indicating that we cannot put much confidence in the negative coefficient. When looking simply at the relationship between average level of violence in neighboring states and conflict onset, we see that the correlation is .0748, producing skepticism in the negative sign seen in Table 3. Finally, spillover violence from neighboring countries is a more recent phenomenon, as evidenced by the Arab Springs, and may be better predictor of civil conflict for more recent dataset.

Although the Motivation Theory does not specifically predict a sign for population, the variable is consistently positive and significant across all six regressions. Intuitively it seems as though a higher population results in more competition for scarce resources and more inequality. Population is correlated with each of the five regions, and when the regions are removed from the regression, we can see that population becomes more significant and has a stronger positive effect on onset of civil conflict. Looking at Regression 1, for example, even though there is not a large effect, we see that an increase in population by one percentage point from a mean of 15.570 (5,804,940 people) to 16.570 (15,779,465 people) results in a 1 percentage point increase in the probability of conflict.

In order to check for robustness, I use an instrumental regression approach to estimate the same model and evaluate the Motivation Theory. Because secondary education, GDP per capita and democracy are so highly correlated, I use this method to test the individual effects of these three variables on conflict onset without the effects of multicollinearity. I use the following two equations:

Equation 2

$$Secondary\ Education = a_0 + a_1 GDPcapita + a_2\ Dem + SecEduc_{resid}$$

Equation 3

$$GDPcapita = a_0 + a_1 SecEduc + a_2\ Dem + GDP_{resid}$$

By regressing GDP per capita and democracy on secondary education, the error term of Equation 2, $SecEduc_{resid}$ is the portion of secondary education that is uncorrelated with GDP per capita and democracy. Similarly, in Equation 3, I regress secondary education and democracy on GDP per capita to find GDP_{resid}, the portion of GDP per capita that is uncorrelated with secondary education and democracy. I then substitute GDP_{resid} for ln(GDP per capita) and $SecEduc_{resid}$ for secondary education in Equation 1. The new model then tests the Motivation Theory using the equation below:

Equation 4

$$Y_C = \beta_0 + \beta_G G_{it-1} + \beta_N N_{it-1} + \beta_S\ \text{SecEduc}_{\text{resid}} + \beta_Y\ \text{GDP}_{\text{resid}} + \beta_D D_{it-1} + \beta_{D2} D^2_{it-1} + \beta_E E_i + \beta_P P_i + \beta_R R_i + \upsilon_i$$

where Y_C is the binary dependent variable for whether conflict has started. The variables used to test the Motivation Theory are G_i, the growth rate of GDP per capita, N_i, the average level of violence amongst neighboring countries, $SecEduc_{resid,}$ the error term from Equation 2, GDP_{resid}, the error term from Equation 3, D_i, the average democracy score, D^2_i, the average democracy score squared, and E_i, the ethnic fractionalization index. The control variables are P_i, the population, and R_i, the region dummies for Europe, Africa, Asia, North/South America, and the Middle East.

Table 5- Onset Instrumental Logit Regressions- Marginal Coefficients

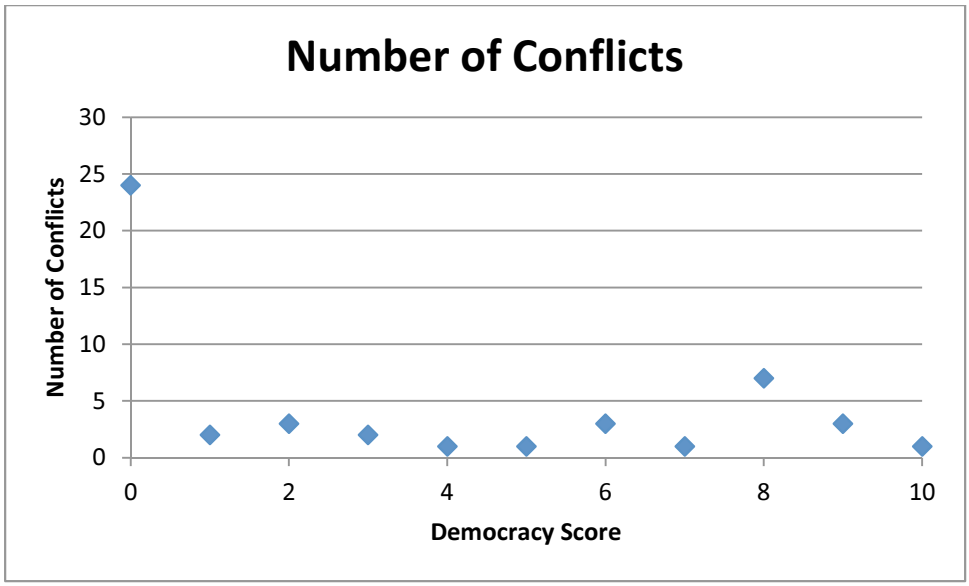
Variables	(1)	(2)	(3)	(4)
GDP Per Capita Growth t-1	-.038 (-1.07)	-.033 (-.90)	-	-
Average Democracy Score t-1	.005 (.60)	.008 (.86)	.004 (.48)	-.004 (2.32)**
(Average Democracy Score)^2 t-1	-.001 (-1.21)	-.001 (-1.39)	-8.77e-4 (-1.06)	-
Secondary Education Resid	-.987 (-2.08)**	-.787 (-1.90)*	-.841 (-2.65)***	-.847 (-2.65)***
GDP Per Capita Resid	-.036 (-2.59)**	-.029 (-2.37)**	-.031 (-3.30)***	-.033 (-3.64)***
Average Neighbor Violence	-8.78e-4 (-.47)	-5.87e-4 (-.32)	-	-
Ethnic Fractionalization	.049 (1.31)	.028 (.85)	-	-
Ln Population	.011 (1.77)*	.011 (1.98)**	.012 (3.13)***	.011 (2.99)***
America Dummy	.011 (.30)	-	-	-
Middle East Dummy	.032 (.56)	-	-	-
Asia Dummy	-.004 (-.11)	-	-	-
Africa Dummy	-.019 (.-.54)	-	-	-
N	665	665	747	747
Pseudo R^2	**.0795**	**.0743**	**.0895**	**.0864**

*Note: The binary dependent variable is the onset of conflict in a 5-year period. All regressions include a constant. Values in parenthesis are t-statistics and the numbers above are marginals. *** p< .01, **p< .05, *p< .10. Coefficients are available in the appendix.*

Regression 1 in Table 5 first runs all of the variables specified in Equation 4. Regression 2 eliminates the individual and jointly insignificant regional dummies to test the effects of these variables on the onset of conflict worldwide, without controlling for regions. Regression 3 further eliminates any insignificant variables and regression 4 eliminates the squared democracy term to test the predictive power of the linear term. All four regressions have 48 conflict observations, which makes up less than 10% of the total observations in all four regressions.

The results from Table 5 are similar to those we found in Table 3. The coefficients for both the GDP per capita residuals and the secondary education residuals remain negative and are very similar in magnitude to the values found in Table 3. In Regression 3, after deletion of insignificant variables, both per capita income and secondary education become significant at the 99% level. For democracy, although neither the linear nor the squared term is individually significant, the variables are jointly significant at the 90% level with a p-value equal to .063 in Regression 3; conflict is most likely at a democracy score of 2.28 (calculated in the same method as earlier). In Regression 4, we see that when controlling for secondary education and GDP per capita, even if we remove the squared term, the linear term is negative and significant at the 95% level; a one point increase in the democracy score from 4.17 to 5.17 results in a .4 percentage point decrease in the probability of conflict. Because there is both joint significance for both the linear and the squared term and significance for just the linear term, it is unclear which model better fits the data. Looking at Graph 4, although, it is clear that the linear pattern is not consistent, there also does not seem to be any type of parabolic pattern. Because 24 out of the 48 conflict observations in Regression 3 and 4 have a democracy score of zero and 32 out of 48 conflict observations from Regression 3 and 4 of Table 5 have a democracy score less than 5, the next part of the analysis will only include the linear term for the democracy variable.

Graph 4- Number of Conflicts per Democracy Score for Observations of Conflict in Regression 3 and 4 of Table 5



The average level of neighbor violence, ethnic fractionalization, growth rate of per capita income, and population all perform very similarly to how they performed in Table 3. The regional dummies were not individually nor jointly significant in Table 3 and Table 5. The regressions give inconsistent results about which regions are most prone to conflict, but, conflict onset is most likely in the Middle East or in Asia and least likely in Africa or the Middle East depending on which regressions you are looking at. However, because the coefficients are insignificant, not much confidence can be given to any sort of analysis or interpretation of these results.

The conflict onset literature has generally tended to focus on civil wars that have a minimum of 1,000 battle deaths per conflict. So far, I have looked at civil conflicts, and both Table 3 and Table 5 have used a violence threshold of 25 battle deaths per conflict. In order to place my work in perspective relative to the existing literature and better understand the different types of conflicts, I

looked as the onset of conflict while varying the minimum violence threshold from a minimum of 25 battle deaths per conflict to a maximum of 10,000 battle deaths per conflict.

I choose to use minimum thresholds of 25, 400, 1000, and 10000 to facilitate comparison with existing literature and based on where there were natural breaks in the dataset. Looking at Graph 5, we can see that the percentage of observations for each threshold decreases at a relatively constant rate, with 48 conflict observations for a violence threshold of 25 battle deaths per conflict, 32 observations for a violence threshold of 400, 28 observations for a violence threshold of 1,000, and 18 conflict observations for a violence threshold of 10,000. The odd-numbered regressions use the same variables as specified earlier in Equation 4, except for the democracy squared term, while the even-numbered regressions eliminate all insignificant variables (the four regional dummies, the average level of violence in neighboring countries, the growth rate of GDP per capita, and the ethnic fractionalization score).

Graph 5- Number of Conflict Observations per Violence Threshold

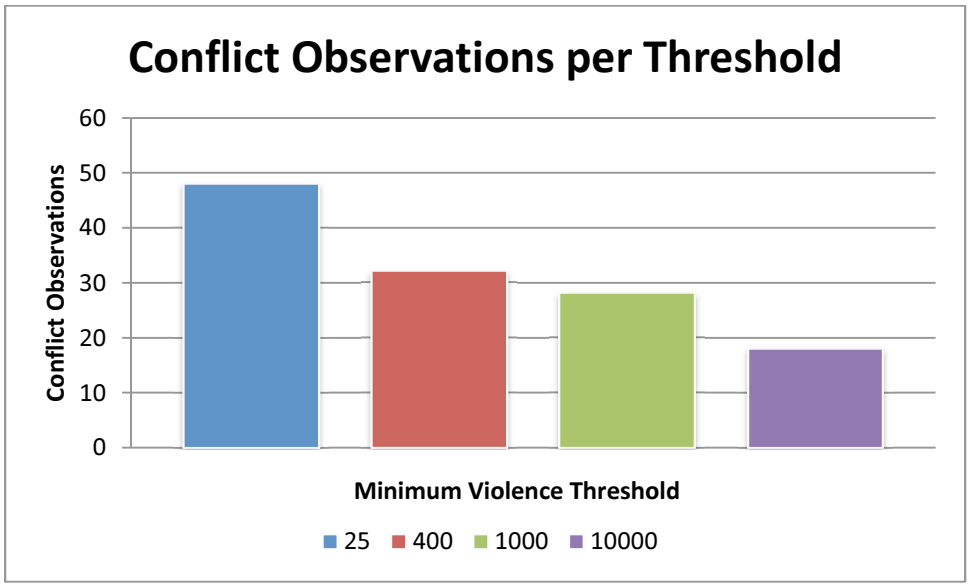


Table 6- Onset Logit Regression Various Thresholds- Marginal Coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Minimum Threshold	25	25	400	400	1,000	1,000	10,000	10,000
GDP Per Capita Growth t-1	-.043 (-1.17)	-	-.006 (-.23)	-	.007 (.31)	-	.016 (.98)	-
Average Dem Score t-1	-.005 (-2.07)**	-.004 (-2.32)**	-.005 (-2.81)***	-.004 (-2.97)***	-.004 (-2.53)**	-.003 (-2.57)**	-.003 (-2.23)**	-.002 (-2.27)**
Secondary Education Resid	-1.013 (-2.09)**	-.847 (-2.65)***	-.799 (-2.15)**	-.587 (-2.50)**	-.726 (-2.27)**	-.573 (-2.80)***	-.449 (-1.82)*	-.334 (-1.99)**
GDP Per Capita Resid	-.041 (-2.92)***	-.033 (-3.64)***	-.024 (-2.40)**	-.019 (-2.86)***	-.024 (-2.71)***	-.019 (-3.35)***	-.015 (-2.08)**	-.011 (-2.38)**
Average Neighbor Violence	-.001 (-.39)	-	-.001 (-1.05)	-	-.001 (-1.20)	-	-4.68e-4 (-.55)	-
Ethnic Frac	.054 (1.42)	-	.018 (.75)	-	.025 (1.20)	-	.019 (1.15)	-
Ln Pop	.011 (1.80)*	.011 (2.99)***	.010 (2.33)**	.008 (3.17)***	.008 (2.06)**	.007 (2.86)***	.004 (1.37)	.004 (2.28)**
America Dummy	.020 (.47)	-	9.29e-5 (0.00)	-	.008 (.45)	-	-.002 (-.12)	-
Middle East Dummy	.039 (.63)	-	.039 (.68)	-	.046 (.65)	-	.019 (.50)	-
Asia Dummy	-.003 (-.07)	-	.008 (.25)	-	.017 (.43)	-	.002 (.11)	-
Africa Dummy	-.018 (-.48)	-	-.006 (-.20)	-	-.002 (-.08)	-	-.010 (-.59)	-
Countries jointly sig	.6993	-	.7411	-	.6165	-	.6308	-
N	665	747	649	731	645	727	635	717
Pseudo R^2	**.0755**	**.0864**	**.1140**	**.1262**	**.1487**	**.1488**	**.1355**	**.1233**

*Note: The binary dependent variable is the onset of conflict in a 5-year period. All regressions include a constant. Values in parenthesis are t-statistics and the numbers above are marginals. *** p< .01, **p< .05, *p< .10. Coefficients can be found in the appendix.*

The results from Table 6 corroborate the results from Table 3 and Table 5 and indicate that the Motivation Theory holds for the onset of conflict of different severities. The variables seem to

have generally the same effect and significance for the 25, 400, and 1000 threshold level. However, at the 10,000 threshold level, there seems to be a waning in significance of variables such as population, secondary education, and GDP per capita, which have been consistently significant at the 95% or 99% level. This indicates that there may be inherent differences between smaller conflicts and war at the 10,000 battle deaths per conflict level. The magnitude of the coefficients of these variables also consistently decreases from the first to the eighth regression, indicating that there may be issues, such as prejudice or religious extremism, that this model does not capture.

Looking at Table 6, both GDP per capita and the percentage of the population enrolled in secondary education are negative and significant across all 8 regressions. For Regression 3 and 4, the results are corroborated by Collier and Hoeffler who also find per capita income and secondary education to be negative and significant at the 99% level (2004). Population is also significant and positive, consistent with the results seen earlier in Table 3 and 5. Although there is a drop in significance in Regression 7 because of a high standard error (.0028), the variable once again becomes highly significant in regression 8 when the standard error drops to .0018.

For the democracy variable, because Graph 5 clearly demonstrated that 24 out of the 48 conflict observations have a democracy score of 0, I only use the linear term. The democracy score is also consistently negative and significant across all eight regressions. This seems to refute Hegre et al's theory about semidemocracies, and instead argues that a one point increase in the democracy score from 4.17 to 5.17 results in somewhere between a .2 and a .5 percentage point decrease in the probability of conflict (2001). For Regression 3 and 4, Lacina also found democracy to be negative and significant at the 95% level when looking at a minimum violence threshold of 1,000 battle deaths (2006). These results support the Motivation Theory and indicate that grievances caused by poverty and an absence of nonviolent means for change motivate individuals to enlist in rebellious

organizations. Large populations augment those types of grievances by increasing inequality and putting pressure on a limited number of resources, making the onset of conflict more likely.

We see the expected results for the average level of neighbor violence, ethnic fractionalization, and growth of GDP per capita. All three remain insignificant and have signs consistent with those seen in Table 3 and Table 5. Although the growth rate of GDP per capita changes signs in Regression 5, the variable remains insignificant and the 95% confidence interval spanning between .-035 and .048 indicates that not much confidence can be placed in this sign. However, the change in sign may again be indicative of the fact that larger wars are inherently different than smaller conflict.

Once again we see that none of the regions are neither individually nor jointly significant at any threshold level. This indicates that the grievances and motivations associated with the onset of conflict at all levels is independent of geography and region and is more universal in nature.

Severity

To analyze the severity of civil conflicts, I test a model that uses the Feasibility Theory to predict the severity of conflict, in terms of battle deaths. The dataset includes155 episodes of conflict in 60 countries between 1960-2004. There is an average of 21,109 battle deaths, ranging from a minimum of 25 deaths in Argentina in 1963 to a maximum of 627,877 deaths in the Afghani war against Hizb-i Demokratik-i Khalq-i in 1978. Instead of conflicts, I look at episodes within a conflict, where an episode is defined as a period of uninterrupted warfare. Episodes occur when fighting recommences after a period of relative peace. Because each episode has a distinct number of

battle deaths, looking at episodes instead of conflicts increases the dataset and the scope of the analysis.

I build on previous economic theories and hypothesize that conflict severity will depend on feasibility and whether both parties are financially and militarily able to engage in intensified conflict. Collier argues that to be viable, "a rebel organization must survive militarily against the government army, and for this it needs manpower and equipment" (Collier and Hoeffler 2004, p.6). Because wars are expensive and dangerous, the Feasibility Theory states that to be able to engage in a large-scale civil war, both parties need recruits, money, and weapons. To test this theory, I use the percentage of young males in the population, the wealth of natural resources in a country, the value of arms imported by the government, and whether or not there is intervention by a third party as proxies for recruits, money, and weapons during war. In order to reduce the effect of outliers and effectively deal with heteroskedasticity, many of these variables are log transformed. This not only smoothes out the distribution of many of the variables, but also produces more reasonable results.

The proxy for recruits, the percentage of the population that is made up of males age 15-29, is hypothesized to be positively correlated with intensified warfare. When looking at the onset of large-scale civil war, Paul Collier finds that "rebellion relies almost exclusively upon this particular segment of the population" because young men have "both an absolute advantage and a taste for violence" (Collier et al. 2009, p.15). For a conflict to reach a high level of severity, there must be a large number of recruits and rebel groups often undertake forced recruitment from the 15-29 age category. The Revolutionary United Forces in Sierra Leone, for example, target young substance abusers and control them via drugs while the Lord's Resistance Army in Uganda kidnaps young men and forces them to commit atrocious acts, making it impossible for them to return to their communities, resulting in more recruits for a larger, more severe conflict. The data for this variable

is from Collier et al's work on the onset of civil war and is thus coded at the beginning of the 5-year period that a year would fall into when rounded down (2009).

The value of fuel and minerals, a channel for both governments and rebel groups to finance war, serve as a natural proxy for financial feasibility. Sierra Leone and Angola are both examples of countries where rebellion is primarily financed through the diamond market. Grossman and Hirschlefier find that war is more likely when rebellious organizations have opportunities to reliably finance their activities through theft, the kidnapping and ransoming of workers, and the extortion rackets against fuel and mineral companies (1995, 1995). There is a lack of data available on these two variables, so the data is coded at the beginning of the five-year period that every year would fall into if it were a part of the onset dataset. This data is from Brunnschweiler and Bulte's research who also looked on the onset of civil war, and is coded at the beginning of the 5-year period that the year would fall into if it were part of the onset dataset (2008).

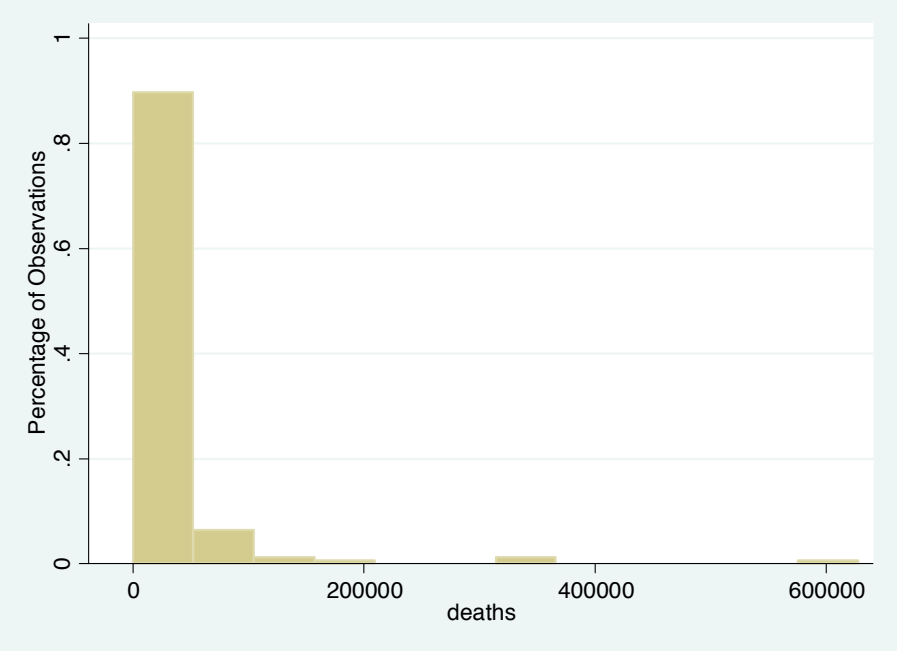
The value of arms that the government imports is measured in constant 1990 US$ and serves as a proxy for weapons. Similarly, 3rd party involvement from other states, also increases the overall number of people and weapons in the conflict. Although external involvement may provide an overwhelming advantage to one party, quickly ending the conflict, Regan has found that military intervention on one or both sides most often results in prolonging conflict as troops that are unfamiliar with one country are pulled into the conflict (2000). Intuitively, both variables should be positively correlated with the number of battle deaths in conflict. The data for arms imports is from the World Bank and is coded for two years before the start of the episode of conflict because of problems with endogeneity, while the variable for third party involvement is from the Lacina and Gleditsch dataset and is coded as an indicator (2005).

Although these variables are not discussed by the Feasibility Theory, the number of years the episode lasts, GDP per capita, the population of the country, and whether or not there is another conflict going on at the same time within the country all serve as effective controls for the analysis. Population is an important control because it provides context—an episode of conflict in Iran in 1999 resulted in the same number of battle deaths as an episode of conflict in Surinam in 1986, even though Iran had more than 166 times the population of Surinam at the time of each country's conflict. Similarly, the length of the conflict is also important. In Bangladesh, a conflict that lasted for 18 years, resulted in the same number of deaths as a conflict that lasted for one year in Sri Lanka. The dummy variable for whether or not government is involved in another conflict either with other rebel organizations or other countries is used as another control so that the number of deaths is not overinflated because of multiple conflicts. Finally, GDP per capita allows us to compare countries of similar socio-economic backgrounds. The data for GDP per capita is accessed from the Penn World Tables and is coded as two years before the start of conflict for reasons of endogeneity (Heston et al 2012). The population variable is taken from the World Bank database and is also coded two years before the start of conflict. Finally, both the length of episode variable and the simultaneous conflict dummy are obtained from the Lacina and Gleditsch dataset (2005).

For the dependent variable, I look at the log of battle deaths. Because there is such a large range of battle deaths, log transforming the data provides a more normal distribution (See Graph 6 and 7). 771 out of 1957 conflict-years are also missing battle-deaths data. Lacina and Gleditsch realize this is a problem and provide low and high estimates for battle-deaths for each observation. For my regressions, I use the high-death estimates because there is greater variance in the data, which results in better performance. To check for robustness, I also experiment with using different variations of the dependent variable, including the log(death/length of conflict),

log(death/population), and log(death/(population*length of years). I further discuss these variations in the results section.

Graph 6- Distribution of Deaths



Graph 7- Distribution of Ln(Deaths)

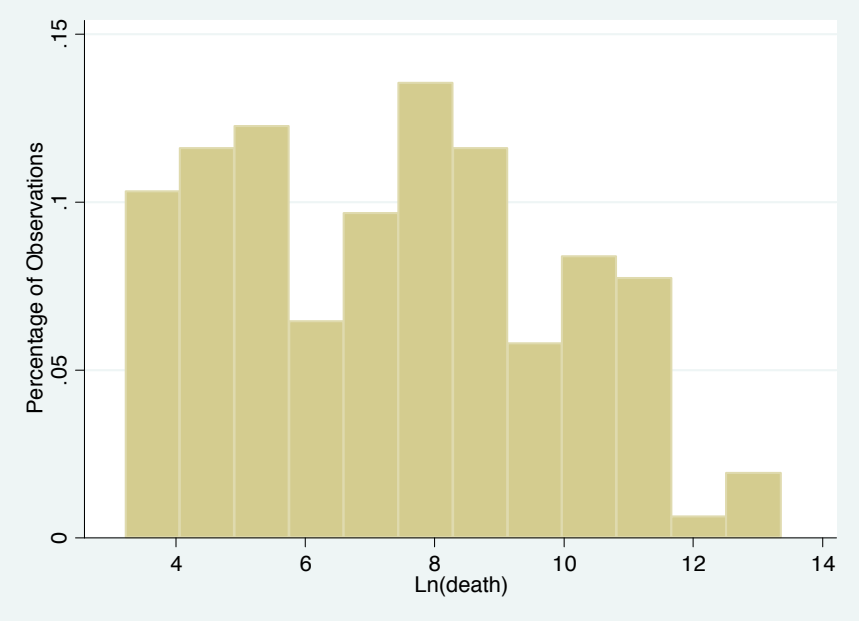


Table 7 succinctly summarizes the variables and their expected signs as predicted by the Feasibility Theory. When analyzing the results, comparing the empirical signs of these variables to the theoretical ones outlined in Table 7 will demonstrate whether or the Feasibility Theory is able to outline the mechanisms by which conflict begins.

Table 7- Expected Signs Based on the Feasibility Theory

Independent Variables	Expected Sign
3rd Party Involvement	+
Arms Imports	+
Value of Fuel/Minerals	+
% of Young Men	+
Length of Years, GDP Per Capita, Population, Other Conflict Occurring at Same Time, Regional Dummies	Controls

In order to evaluation the Feasibility Theory, I use the following regression equation:

Equation 5

$$lnY_D = \beta_0 + \beta_A A_{i\,t-2} + \beta_C S_i + \beta_M lnM_{i(t/5)} + \beta_P P_{it-2} + \beta_G lnG_{it-2} + \beta_F lnF_{i(t/5)} + \beta_L L_i + \beta_o O_i + \beta_R R_i + \upsilon$$

where Y_D is the number of battle-deaths. The variables used to test the Feasibility Theory are A_i, the value of arms imported by the government, F_i, the value of fuels and minerals per capita, S_i, intervention from a third party state, and M_i, the percentage of the population that is male aged 15-29. The control variables are P_i, the population of the nation, G_i, GDP per capita, L_i, the length of conflict and O_i, an indicator for whether there is another conflict occurring simultaneously. Finally R_i represents the region dummies for five regions (Africa, Asia, North/South America, Europe, and the Middle East).

Results

The results from the first set of regressions are displayed in Table 8. The first regression includes all of the variables included in Equation 5. Regression 2 removes the regional dummies to look at the predictors of severity on a global context, without controlling for regions. Regression 3 removes all insignificant variables to see whether there changes in significance of any other variable. Regression 4 tests the validity of using episodes instead of conflicts by including an indicator for whether or not the episode is the first episode of that conflict. This variable is not significant and does not have a large impact on the sign or significance on any of the other variables, indicating that using episodes instead of conflicts does not seriously impact the results. Regression 5 drops the observations from Iran and will be discussed in more detail later on.

The results from Table 8 do not seem to completely support the hypothesis that the severity of conflict is determined by feasibility. The length of years of the conflict, third party involvement, the value of arms imports, and whether or not there is another ongoing conflict in the country are all positively correlated with the total number of battle deaths while GDP per capita, population, the percentage of men aged 15-29, and the value of fuel and minerals per capita are all negatively correlated with the severity of conflict. The length of years, per capita income, population, arms imports, and the value of fuel and minerals per capita are significant in all four regressions.

Table 8- Severity Regressions

Variables	(1)	(2)	(3)	(4)	(5)
Length of Years	.208 (10.38)***	.203 (10.44)***	.202 (10.42)***	.205 (10.34)***	.207 (10.22)***
Ln of GDP per Capita t-2	-.418 (-2.40)**	-.511 (-3.49)***	-.521 (-3.57)***	-.523 (-3.49)**	-.380 (-2.13)**
Third Party Involvement Dummy	1.153 (1.11)	1.231 (1.20)	-	1.281 (1.24)	1.154 (1.10)
Simultaneous Conflict Dummy	.493 (1.34)	.649 (1.88)*	.656 (1.91)*	.639 (1.84)*	.275 (.69)
Ln Population t-2	-.338 (-2.12)**	-.329 (-2.59)**	-.367 (-3.09)***	-.335 (-2.61)**	-.251 (-1.47)
Ln Arms Imports t-2	.246 (2.29)**	.264 (2.70)***	.260 (2.68)***	.264 (2.70)***	.204 (1.81)*
Ln Percentage of Men Aged 15-29 5-year periods	-1.688 (-.84)	-1.143 (-.62)	-	-1.082 (-.58)	-1.833 (-.87)
Ln Fuel and Minerals per Capita 5-year periods	-.091 (-1.76)*	-.089 (-1.76)*	-.087 (-1.72)*	-.085 (-1.66)*	-.094 (-1.81)*
First Episode Dummy	-	-	-	-.121 (-.40)	-
Africa Dummy	1.014 (.99)	-	-	-	1.189 (1.15)
Asia Dummy	1.204 (1.21)	-	-	-	1.318 (1.31)
America Dummy	.531 (.53)	-	-	-	.620 (.61)
Middle East Dummy	1.107 (1.15)	-	-	-	1.347 (1.31)
N	149	149	149	149	138
Adjusted R^2	**.5095**	**.5145**	**.5152**	**.5155**	**.5017**

*Note: The dependent variable is the natural log of the total number of battle deaths. All regressions include a constant and values in parenthesis are t-statistics. *** p< .01, ** p< .05, *p< .10*

Looking at Table 8, we see that the value of fuel and minerals per capita is not positive as predicted by the Feasibility Theory, but rather negative and significant in all three regressions. Because both the independent and dependent variable are log transformed, the coefficient is the partial elasticity—so a 1% increase in the value of fuel and minerals per capita results in somewhere

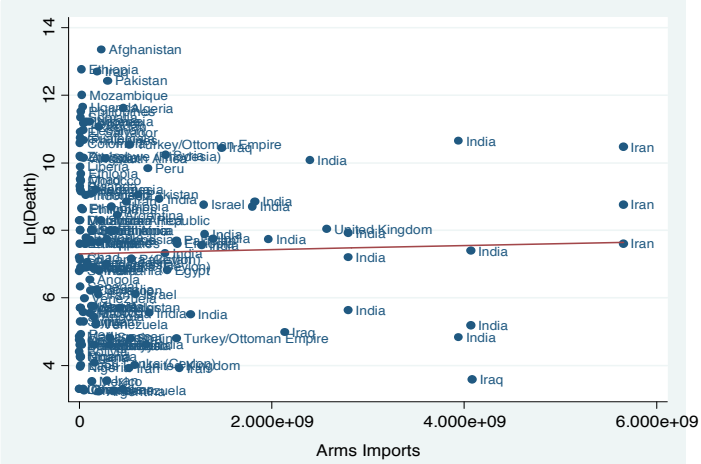
between a .085% and .091% decrease in the number of battle deaths per episode of conflict. According to the Feasibility Theory, fuel and minerals are a mechanism for both rebel groups and the government to make money, which is necessary to sustaining long and expensive wars. However, the data here indicates that there may be other mechanisms at play. Fearon and Laitin hypothesize that a larger value of fuel and minerals per capita may indicate a strong and wealthy government that can easily defeat rebel organizations and quickly end conflicts (2003). This finding may also support the Motivation Theory that if there are more fuel and minerals in a nation, people are wealthier, more satisfied, and less likely to stay involved in a long and bloody conflict. The fact that GDP per capita is also significant and negatively correlated with the severity of conflict in all four regressions also supports the Motivation Theory.

The percentage of the population that is comprised of young men is not significant and is negative, which disagrees with the sign as predicted by the Feasibility Theory. The results for this variable are quite messy—large standard errors that become as high as 1.844 in regression two make analysis and interpretation very difficult. A 95% confidence interval from -37.10 and 16.63 undermines confidence even in the sign of the variable. Overall, the percentage of young men in the population does not seem to be a strong predictor of how severe a conflict will be—removing the variable from Regression 2 does not have an impact on the results of Regression 3. This may be because even in full-scale wars such as Kashmir or Algeria, the total number of recruits is often in the hundreds or low thousands. The insurgents are relatively small because large groups often face internal discord and are easy to defeat (Fearon and Laitin 2002).

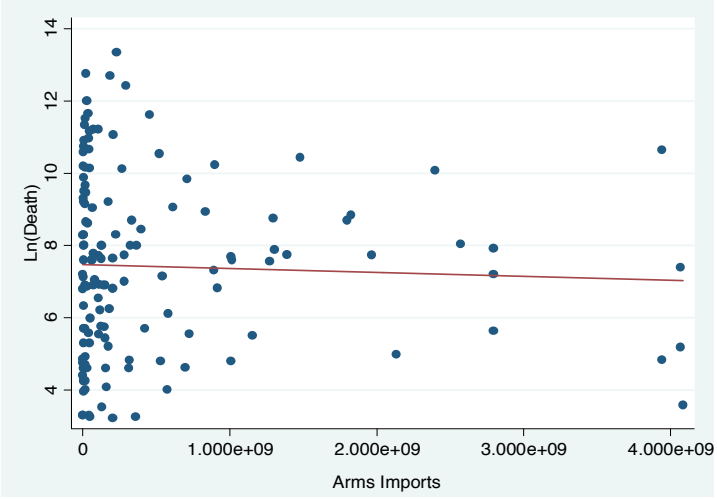
The value of arms imports is the main variable that seems to strongly support the Feasibility Theory. The coefficient is both positive and significant at the 99% level in both the second and third regression. However, looking at Graph 8, a scatterplot of ln(death) and arms imports, we see that although the correlation is .0265, the positive relationship is mostly driven by Iran. Dropping Iran

from the dataset, results in a negative correlation of -.0412 between arms imports and ln(deaths) in Graph 9. Iran is a unique country not only because of the large amount of money spent on weapons imports, but how often those weapons are used to support external parties in Syria and Lebanon. After dropping Iran from the dataset, the significance of the arms imports variable decreases from 99% to 90% significance in Regression 5. Although the coefficient is still positive in Regression 5, this indicates that the value of arms imports may not support the Feasibility Theory as strongly as it might originally appear.

Graph 8- Ln(Death) versus Arms Imports Including Iran



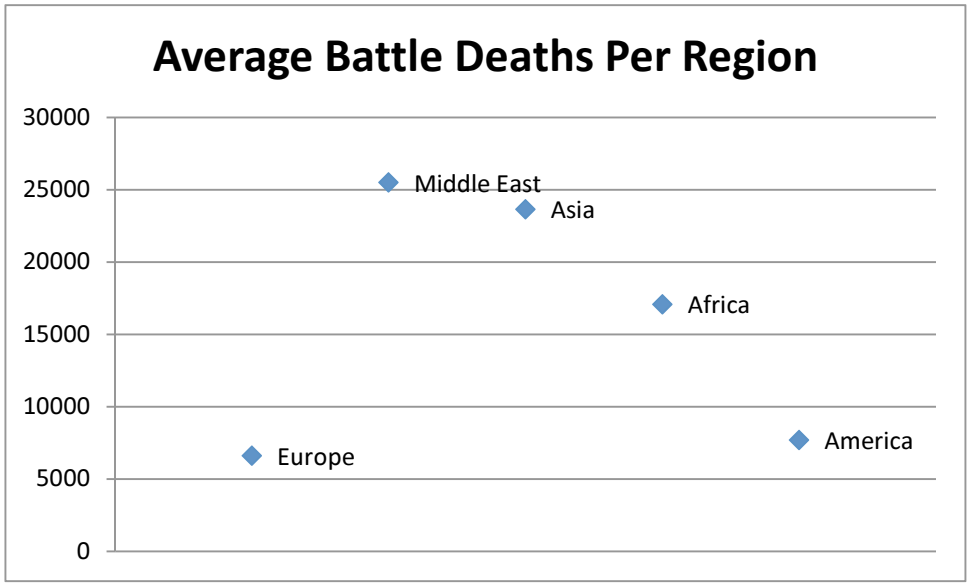
Graph 9- Ln(Death) versus Arms Imports Excluding Iran



Finally, although third party involvement is positive and consistent with the Feasibility Theory, the variable is not significant in any of the regressions in Table 11. The variable is also unevenly distributed with only 5 out of 144 observations having third party involvement. The uneven distribution results in a large standard error and a 95% confidence interval ranging from -.86 to 3.25. Removing the third party involvement indicator from Regression 2 also does not have a large impact on the results of Regression 3, indicating that the third party involvement variable may not be a strong predictor of conflict severity.

The control variables such as the length of years of the episode, GDP per capita, population are all significant. The simultaneous conflict indicator and the length of years variable are both positive and significant, as would be expected. However, in all four regressions, GDP per capita is negative, which indicates that the Motivation Theory may also be applicable when looking at severity. Population is also negative and significant in all four regressions. Contrary to the Feasibility Theory, which hypothesizes that a large population means that there are more potential recruits, the results indicate that a larger population is negatively correlated with conflict severity. The regional dummies are not significant, perhaps because variables such as per capita income and population have already accounted for historical, cultural, economic, and political regional differences. However, they coefficients are all positive, indicating that the Middle East, Asia, Africa, and the Americas are more likely to have severe conflicts than Europe. The results from Table 8 are corroborated by the distribution of battle deaths data in Graph 10. Furthermore, Table 8 also indicates that the Middle East and Asia are the most likely to have severe conflicts which is also validated by Graph 10.

Graph 10- Average Battle Deaths Per Region



In Table 9, I use three different types of dependent variables to check for robustness and control for different types of conflicts. For Regressions 1 and 2, I divide the number of deaths by population in order to scale the number of battle deaths. As stated before, countries with vastly different population sizes like Surinam and Iran may have the same number of battle deaths, so scaling the number of battle deaths by population attempts to control for those differences between conflicts. Similarly, for Regression 3 and 4, I divide by the number of years that the conflict lasted. Countries like Bangladesh and Sri Lanka demonstrate how the same number of battle deaths can occur over a vastly different number of years, so scaling the number of deaths by the number of years attempts to deal with those differences. Finally, Regression 4 and 5, divide by both population and the number of years. This scales the battle deaths by two variables in order to control for both the population and the duration of the episode. The odd-numbered regressions include all the variables defined in Equation 5 and the even-numbered regressions remove all insignificant variables.

Table 9- Severity Regressions- Different Dependent Variables

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dependent Variable	Log(death/ pop)	Log(death/ pop)	Log(death/ length of years)	Log(death/ length of years)	Log(death/ years*pop)	Log(death/ years*pop)
Length of Years	.208 (10.38)***	.208 (10.76)***	.082 (4.60)***	.082 (4.84)***	.082 (4.60)***	.082 (4.84)***
Ln of GDP per Capita t-2	-.418 (-2.40)**	-.561 (-3.85)***	-.423 (-2.74)**	-.507 (-3.99)***	-.423 (-2.74)**	-.507 (-3.99)***
Third Party Involvement Dummy	1.153 (1.11)	-	.482 (.52)	-	.482 (.52)	-
Simultaneous Conflict Dummy	.492 (1.34)	-	.304 (.93)	-	.304 (.93)	-
Ln Population t-2	-1.338 (-8.41)***	-1.298 (-11.38)***	-.312 (-2.21)**	-.308 (-3.09)***	-1.312 (-9.29)***	-1.398 (-13.12)***
Ln Arms Imports t-2	.246 (2.29)**	.294 (3.06)***	.194 (2.03)**	.222 (2.64)**	.194 (2.03)**	.222 (2.64)**
Ln Percentage of Men Aged 15-29 5-year periods	-1.688 (-.84)	-	-1.217 (-.68)	-	-1.218 (-.68)	-
Ln Fuel and Minerals per Capita 5-year periods	-.091 (-1.76)*	-.087 (-1.72)*	-.079 (-1.74)*	-.075 (-1.70)*	-.079 (-1.74)*	-.075 (-1.70)*
Africa Dummy	1.014 (.99)	-	.825 (.91)	-	.825 (.91)	-
Asia Dummy	1.204 (1.21)	-	.866 (.98)	-	.866 (.98)	-
America Dummy	.531 (.53)	-	.628 (.70)	-	.628 (.70)	-
Middle East Dummy	1.107 (1.15)	-	.888 (1.04)	-	.888 (1.04)	-
N	149	149	149	149	149	149
Adjusted R^2	**.6706**	**.6685**	**.2446**	**.2633**	**.6489**	**.6576**

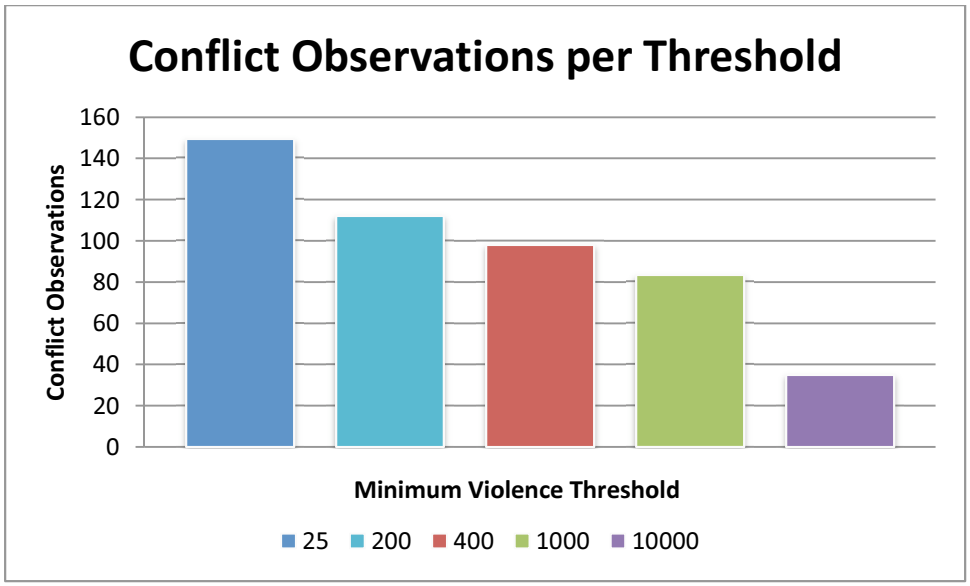
*Note: All regressions include a constant and values in parenthesis are t-statistics. *** p< .01, ** p< .05, *p< .10*

Table 9 still does not seem to support for the Feasibility Theory. In Regressions 1 and 2, dividing by population does not change the sign or significance of any of the variables, relative to Table 8. In fact, Regression 1 in Table 9 looks almost exactly like Regression 1 in Table 8, indicating that scaling the number of battle deaths by population does not seem to have a large impact on the results. In Regression 3 and 4, scaling by the number of years still does not change the results too

much. The sign and significance of all the variables remains the same. The magnitudes of the coefficients also remain very similar to the magnitudes of the coefficients in Regression 1 and 2. We see similar results in Regressions 5 and 6 in terms of sign and significance. This indicates that no matter how we scale the dependent variable in order to account for different types of conflicts, we still do not see support for the Feasibility Theory. In all the odd-numbered regressions, we see that the same variables are insignificant (the percentage of men aged 15-29, the simultaneous conflict dummy, the third party involvement dummy, and the regional dummies). The regional dummies are neither individually nor jointly significant. However, the coefficients of all the regional dummies in regressions 1, 3, and 5 are positive, again supporting the distribution of the battle deaths shown in Graph 10.

In Table 10, I use a variety of minimum violence thresholds in order to determine whether the same indicators are important at different levels of conflict severity and whether the Feasibility Theory holds for any level of severity. Both Table 8 and Table 9 use a minimum violence threshold of 25 deaths per episode. In Table 10, I vary that number from a minimum of 25 battle deaths per episode to 10,000 battle deaths per episode. I choose to use minimum thresholds of 25, 200, 400, 1,000, and 1,0000 based on the natural breaks in the dataset. Looking at Graph 11, we can see that the number of observations for each threshold decreases at a relatively constant rate, with 149 conflict observations for a violence threshold of 25 battle deaths per episode, 112 observations for a violence threshold of 200, 98 observations for a violence threshold of 400, 83 observations for a violence threshold of 1,000, and 35 conflict observations for a violence threshold of 10,000. The odd-numbered regressions use the same variables as specified earlier in Equation 4, while the even-numbered regressions eliminate all insignificant variables.

Graph 11- Distribution of Conflict Observations



The results from Table 10 corroborate the results from Table 8 and Table 9 and indicate that the Feasibility Theory does not hold for any level of conflict severity. Although arms imports is positive and significant at three different levels, these regressions include Iran, and it was clear from Table 8 that the arms imports variable decreases in significance one Iran is removed from the dataset. Additionally, the third party involvement dummy is insignificant across all five regressions and both the fuel and minerals per capita variable and the percentage of men aged 15-29 variable are negative and significant in multiple regressions. Looking at Table 10, no level of severity has the correct signs and significance as predicted by the Feasibility Theory.

Table 10- Severity Regression-Different Minimum Thresholds

Variables	(1)	(2)	(3)	(4)	(5)
Minimum Number of Deaths	25	200	400	1,000	10,000
Length of Years	.208 (10.38)***	.161 (8.86)***	.135 (7.86)***	.123 (7.82)***	.050 (2.50)**
Ln of GDP per Capita t-2	-.418 (-2.40)**	-.239 (-1.46)	-.359 (-2.27)**	-.247 (-1.70)*	-.330 (-1.53)
Third Party Involvement Dummy	1.153 (1.11)	.471 (.53)	.094 (.12)	.838 (.98)	-.515 (-.67)
Simultaneous Conflict Dummy	.493 (1.34)	.283 (.81)	.044 (.13)	-.205 (-.65)	.095 (.23)
Ln Population t-2	-.338 (-2.12)**	-.116 (-.62)	-.123 (-.68)	-.255 (-1.35)	-.484 (-1.65)
Ln Arms Imports t-2	.246 (2.29)**	.122 (1.04)	.145 (1.32)	.188 (1.76)*	.314 (2.04)*
Ln Percentage of Men Aged 15-29 5-year periods	-1.688 (-.84)	-4.993 (-1.89)*	-6.286 (-2.49)**	-6.637 (-2.69)***	-.597 (-.16)
Ln Fuel and Minerals per Capita 5-year periods	-.091 (-1.76)*	-.079 (-1.62)	-.051 (-1.07)	-.015 (-.34)	-.112 (-2.18)**
Africa Dummy	1.014 (.99)	1.787 (1.44)	2.151 (1.89)*	3.907 (2.88)***	.675 (1.10)
Asia Dummy	1.204 (1.21)	1.774 (1.47)	2.235 (2.02)**	3.749 (2.86)**	1.229 (1.43)
America Dummy	.531 (.53)	1.683 (1.30)	2.201 (1.85)*	3.289 (2.43)**	-
Middle East Dummy	1.107 (1.15)	2.383 (1.97)*	2.770 (2.49)**	4.376 (3.32)***	.614 (.81)
Joint Sig P-values	.6320	.3203			
N	149	112	98	83	35
Adjusted R^2	**.5095**	**.4392**	**.4346**	**.5065**	**.2440**

*Note: The dependent variable is the natural log of the total number of battle deaths. All regressions include a constant and values in parenthesis are t-statistics. *** p< .01, ** p< .05, *p< .10*

The percentage of the population that is made up of young men is negative across all five regressions and significant at the 200, 400, and 1000 battle-death level. In the first four regressions, the variable consistently increases in magnitude and significance. Although, it is not significant at the 10,000 battle deaths level, the variable is still negative, contrary to what is hypothesized by the

Feasibility Thesis. This may be because of reasons of endogeneity and countries that are more likely to have large conflicts are also more likely to have higher child mortality rates, and thus a lower percentage of young adults. This paper, however does not further explore that hypothesis, except to say that the young men variable does not appear to support the Feasibility Theory.

The value of fuel and minerals per capita is also negative in all five regressions. Once again, we see a pattern in the first four regressions where the magnitude and the significance seem to decrease. The variable is significant at the 25 and 10,000 battle-death levels, indicating that rebellious organizations are most deterred from engaging in small conflicts and huge wars when there is a large value of fuel and minerals per capita. This may be because if the value of fuel and minerals per capita is high, it may sufficiently increase the opportunity cost of conflict at the 25 battle-death level, and may be enough to make the 10,000 battle-death episode "not worth it."

The control variables, GDP per capita, population, the simultaneous conflict indicator, and the length of years variable all also perform similarly to how they performed in Table 8 and Table 9. Again we see that GDP per capita is negative in all five regressions. This implicates the Motivation Theory and indicates that a high per capita income decreases the level of grievances, increasing the opportunity cost of conflict. Looking at the regions, however, it seems that both the joint and the individual significance of the regions increase as the minimum threshold increases from 25 to 1,000 battle deaths per episode. This means that once conflict becomes bloodier and more severe, it may be more strongly correlated to historic, geographic, and cultural reasons that are distinct for each region, except for at the 10,000 battle death level.

Most interesting is that we do not see these same types of patterns in the 10,000 battle deaths per episode threshold as we do in the other thresholds, indicating that large and bloody civil-wars are fundamentally different than smaller conflicts. The third party involvement dummy, the value of fuel and minerals per capita, the percentage of young men in the population, and even the

regional dummies act atypically at the 10,000 battle deaths level. Although they still do not seem to support the Feasibility Theory, these factors indicate that these large conflicts have inherently different properties. The fact that the regional dummies are no longer significant supports the findings from the onset regressions in section IV and demonstrates that wars of that magnitude are more universal in nature and are not determined by cultural or historical differences. However with a sample size of 35, the results from Table 10 Regression 5 should also be analyzed and interpreted carefully.

Despite changing the dependent variable and the minimum violence threshold, the results from all Tables 8, 9, and 10 all indicate that the Feasibility Theory does not seem to hold when looking at severity of civil conflict. Future research may benefit from evaluating the Motivation Theory for predicting the severity of civil conflict.

Reversed Models

For the reversed models, I test whether the variables associated with the Feasibility Theory are predictive of conflict onset and whether the variables associated with the Motivation Theory are predictive of conflict severity. I use a violence threshold of 25 battle deaths for both models—looking at different levels of severity in the reversed models is beyond the scope of this paper. For the onset model, I use Equation 6:

Equation 6

$$Y_C = \beta_0 + \beta_A A_{i\,t-2} + \beta_C S_i + \beta_M lnM_{i(t/5)} + \beta_P P_{it-2} + \beta_G lnG_{it-2} + \beta_F lnF_{i(t/5)} + \beta_o O_i + \beta_R R_i + \upsilon$$

where Y_C is the binary dependent variable for whether conflict has started. The variables used to test the Feasibility Theory are A_i, the value of arms imported by the government, F_i, the value of fuels and minerals per capita, S_i, intervention from a third party state, and M_i, the percentage of the population that is male aged 15-29. The control variables are P_i, the population of the nation, G_i, GDP per capita, and O_i, an indicator for whether there is another conflict occurring simultaneously. Finally R_i represents the region dummies for five regions (Africa, Asia, North/South America, Europe, and the Middle East).

Table 11 tests the variables associated with the Feasibility Theory. Regression 1 includes all the variables specified in Equation 6. Regression 2 removes the insignificant regional dummies and tests the universality of the variables without controlling for region. Both regressions have a total of 702 observations, 59 of which are conflict observations. Neither regression includes the length of conflict control variable because including the variable erodes the significance of all other, producing unintelligible results (See Regression 3).

Table 11- Feasibility Onset Model- Marginal Coefficients

Variables	(1)	(2)	(3)
Length of Conflict	-	-	1.789 (.14)
Ln of GDP per Capita t-2	-.033 (-4.63)***	-.032 (-5.00)***	-.237 (-.14)
Third Party Involvement Dummy	.279 (.68)	.300 (.68)	-.308 (-.08)
Simultaneous Conflict Dummy	.179 (2.22)**	.181 (2.29)**	-.407 (-.14)
Ln Population t-2	.008 (1.21)	.006 (.94)	-.118 (-.14)
Ln Arms Imports t-2	.002 (.45)	.002 (.34)	.143 (.14)
Ln Percentage of Men Aged 15-29 5-year periods	.008 (.11)	.019 (.26)	.776 (.14)
Ln Fuel and Minerals per Capita 5-year periods	.001 (.25)	.002 (.53)	.028 (.14)
Africa Dummy	.010 (.28)	-	.806 (.71)
Asia Dummy	-.004 (-.12)	-	.778 (.56)
America Dummy	.042 (.98)	-	.799 (.75)
Middle East Dummy	.026 (.57)	-	-.473 (-.15)
Regional Joint Sig	.5921		.4495
N	702	702	702
Adjusted R^2	**.1462**	**.1394**	**.9059**

*Note: The binary dependent variable is the onset of conflict in a 5-year period. All regressions include a constant. Values in parenthesis are t-statistics and the numbers above are marginals. *** p< .01, **p< .05, *p< .10. Coefficients can be found in the appendix.*

Looking at the first two regressions of Table 11, we can see that the value of fuel and minerals per capita, the percentage of young men in the population, third party involvement, and arms imports are all positive as predicted by the Feasibility Theory. However, none of these variables are significant. Moreover, even variables such as population, which were previously significant, are no longer significant. The regional dummies are also neither individually nor jointly significant in either regression. Only the GDP per capita variable and the simultaneous conflict

dummy are significant. The results indicate that a one percentage point increase in GDP per capita results in somewhere a 3.3 and 3.2 percentage point decrease in the probability of conflict. These are similar to the results we found in the original onset model when testing the Motivation Theory. Previously, we saw high correlations in the onset model, but looking at Table 12, it is clear that the variables are not highly correlated so an instrumental regression based model will not greatly improve the significance of the results. The results from Table 11 do not seem to support the Feasibility Theory.

Table 12- Feasibility Variable Correlation Matrix

	Ln GDP Cap	Other Actors	Simult Conflict	Ln Pop	Ln Arms	Ln Men	Ln Fuel	Africa	Asia	ME
Ln GDP Cap										
Other Actors	-0.002									
Simult Conflict	-0.145	0.119								
Ln Pop	-0.055	-0.038	0.192							
Ln Arms	0.321	0.017	0.121	0.442						
Ln Men	-0.137	-0.01	0.068	0.136	0.028					
Ln Fuel	0.299	-0.066	-0.046	0.028	0.297	0.028				
Africa	-0.426	0.036	0.07	-0.176	-0.038	0.028	-0.101			
Asia	-0.19	-0.026	0.126	0.367	0.147	0.215	-0.149	-0.257		
ME	0.135	0.061	0.065	-0.165	0.238	0.178	0.191	-0.201	-0.183	
Americas	0.071	-0.029	-0.115	-0.022	-0.174	0.08	0.017	-0.286	-0.26	-0.203

For the severity model, I use Equation 7:

Equation 7

$$lnY_D = \beta_0 + \beta_G G_{it-1} + \beta_N N_{it-1} + \beta_S \text{ SecEduc}_{\text{resid}} + \beta_Y \text{ GDP}_{\text{resid}} + \beta_D D_{it-1} + \beta_E E_i + \beta_P P_i + \beta_R R_i + \upsilon_i$$

where Y_D is the number of battle deaths per episode of conflict. The variables used to test the Motivation Theory are G_i, the growth rate of GDP per capita, N_i, the average level of violence amongst neighboring countries, $\text{SecEduc}_{\text{resid}}$, the error term from Equation 2, $\text{GDP}_{\text{resid}}$, the error term

from Equation 3, D_i, the average democracy score, and E_i, the ethnic fractionalization index. The control variables are P_i, the population, and R_i, the region dummies for Europe, Africa, Asia, North/South America, and the Middle East.

Table 13 tests the variables associated with the Motivation Theory. Regression 1 includes all the variables specified in Equation 7. Regression 2 removes the regional dummies which are both individually and jointly insignificant in order to test the universality of the variables without controlling for region. The third regression removes the average level of violence in neighboring countries variable, which is once against insignificant. The first three regressions have 144 observations. Regression 4 removes the 11 Middle Eastern countries in the dataset and is discussed later in more detail later.

Table 13- Motivation Severity Model

Variables	(1)	(2)	(3)	(4)
GDP Per Capita Growth t-1	.545 (.69)	1.206 (1.76)*	1.242 (1.88)*	-.722 (-.72)
Average Democracy Score t-1	-.203 (-3.15)***	-.175 (-3.04)***	-.174 (-3.04)***	-.247 (-3.59)***
Secondary Education Resid	-42.910 (-2.78)***	-28.764 (-2.78)***	-29.296 (-2.93)***	-35.711 (-2.20)**
GDP Per Capita Resid	-.912 (-2.38)**	-.576 (-2.01)**	-.584 (-2.07)**	-1.010 (-2.60)**
Average Neighbor Violence	-.038 (-.79)	-.009 (-.21)	-	.023 (.46)
Ethnic Fractionalization	-2.621 (-2.50)**	-2.335 (-2.66)***	-2.366 (-2.75)***	-1.969 (-1.77)*
Ln Population	.391 (2.48)**	.499 (3.41)***	.492 (3.47)***	.419 (2.68)***
America Dummy	-.977 (-.93)	-	-	-.275 (-.26)
Middle East Dummy	.915 (.88)	-	-	-
Asia Dummy	.774 (.78)	-	-	.968 (.97)
Africa Dummy	.774 (.78)	-	-	-.312 (-.26)
N	144	144	144	123
Adjusted R^2	**.1260**	**.1098**	**.1160**	**.1504**

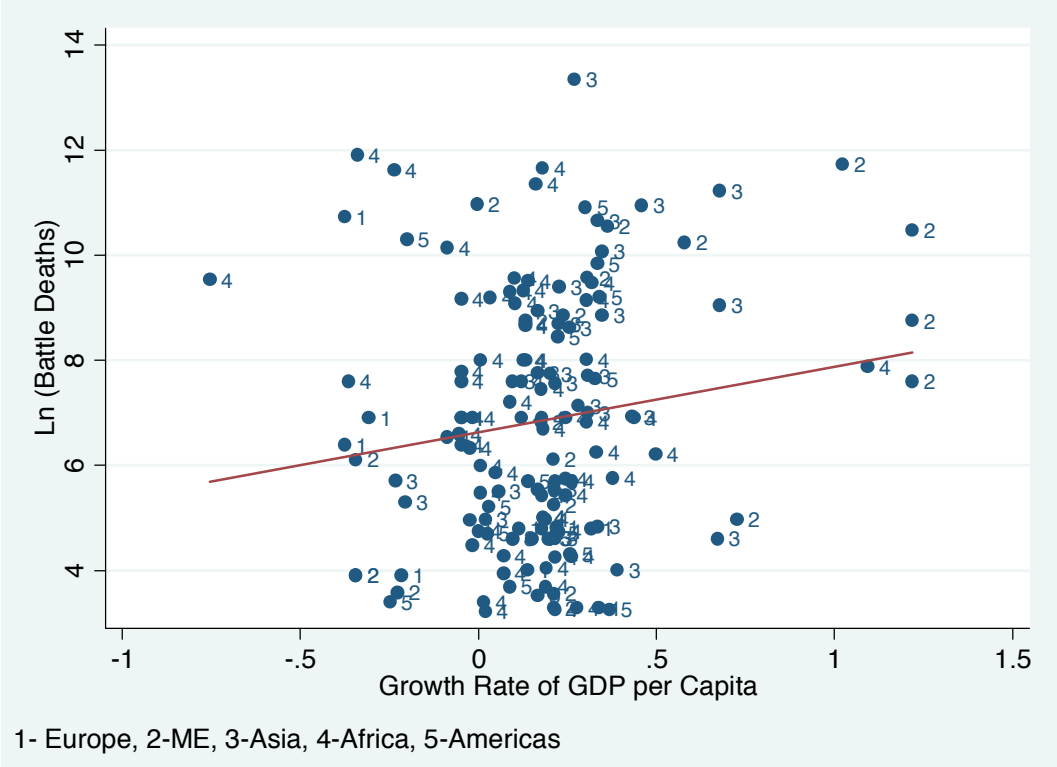
*Note: The dependent variable is the natural log of the total number of battle deaths. All regressions include a constant and values in parenthesis are t-statistics. *** p< .01, ** p< .05, *p< .10*

Looking at Table 13, it seems that the Motivation Theory predicts the severity of civil conflict very well. Democracy, the percentage of the population enrolled in secondary education, ethnic fractionalization, and GDP per capita are all negative and significant in the first three regressions. Population is also positive and significant across the first three regressions, supporting the theory that the larger the population, the more pressure there is on limited resources, the more inequality, and the higher probability of larger and bloodier conflicts.

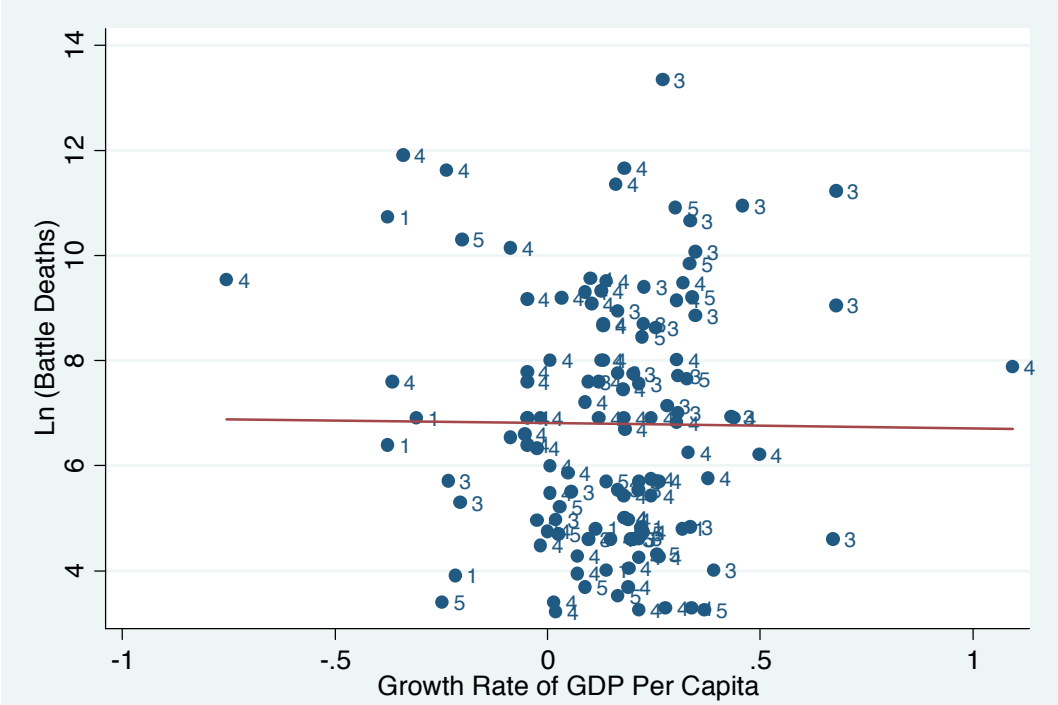
The growth rate of GDP per capita appears to be the only variable whose sign is not accurately predicted by the Motivation Theory. The basic correlation between ln(battle deaths) and

growth rate of GDP per capita is .1507. However, looking at Graph 12, we can see that many of the countries with a high growth rate are from the Middle East. This may be because even though there are a large number of battle deaths, there is also a substantial amount of growth rate of GDP per capita because of revenue from oil and gas. Removing the observations of the Middle Eastern countries results in a negative relationship between the growth rate of GDP per capita and ln(battle deaths) (Graph 13). Dropping the Middle Eastern countries results in a negative correlation of -.0102 between ln(battle deaths) and GDP per capita. Looking at Regression 4, dropping the Middle Eastern observations also results in a negative coefficient of the growth rate of GDP per capita.

Graph 12- Ln(Deaths) vs. Growth Rate of GDP per Capita with Middle East



Graph 13- Ln(Deaths) vs. Growth Rate of GDP per Capita without Middle East



1-Europe, 2-ME, 3-Asia, 4-Africa, 5-Americas

Conclusion

Using a comprehensive dataset from 1960-2004, I examine the onset and severity of battle deaths in civil conflict and find that the Motivation Theory seems to accurately predict the indicators of conflict onset while the Feasibility Theory does not seem to hold when looking at the predictors of conflict severity. For the onset model, I find that the percentage of the population enrolled in secondary education, the average democracy score, and the per capita income are all significant and support the theory that poverty and a lack of nonviolent opportunities for change motivate individuals to rebel. Although not significant, the coefficients for ethnic fractionalization and the growth rate of per capita income are positive and further support the theory of relative deprivation. The results hold even when using three different models experimenting with dependent variables and the violence thresholds. Although data on both land and economic GINI coefficients is limited, further research should focus on incorporating better and more accurate measurements of inequality when looking at the onset of conflict.

For the severity model, I find that the Feasibility Theory does not seem to hold. Although arms imports are consistently significant, population, the value of fuel and minerals per capita, and the percentage of young men in the population are both negative indicating that feasibility is not the only theory at play. Per capita income is again negative indicating that the Motivation Theory may also play a role when looking at the severity of civil conflict. Even when using a variety of different dependent variable and minimum violence thresholds, the results remain largely the same and in discord with the Feasibility Theory. The only strong pattern we see is that as the minimum violence threshold increases, the five different regions become more and more significant, indicating the need to look more closely at cultural, historical, ethnic, and political factors that differ from region to region.

In the integrated models, I found that although the value of fuel and minerals per capita, the percentage of young men in the population, third party involvement, and arms imports were all positive in the onset model, none of the variables were significant, indicating that the Feasibility Theory is not able to well predict the indicators of conflict onset. However, for the severity model, democracy, the percentage of the population enrolled in secondary education, ethnic fractionalization, population, and GDP per capita were all negative and significant, indicating the Motivation Theory can not only predict the indicators for conflict onset, but that it can also predict the indicators for conflict severity. Based on this analysis, further research needs to focus on the Motivation Theory and the different mechanisms through which these indicators actually result in the onset and escalation of civil conflict. Empirical work should strive to identify causal relationships, test for different mechanisms, and check for robustness against alternative theories.

Research in this area also needs to better account for different types of civil conflicts—where more than one rebel group is involved, the importance of ideology and identity in recruitment, and the role of selfish, irrational, or revengeful leaders (Blattman and Miguel 2010). Because these variations in conflict may be obscured when conducting cross-country studies, more research should focus on the subnational level, perhaps by looking closely at case studies.

Finally more accurate and reliable data will increase confidence in empirical results. For this paper, better data on the number of battle deaths and indicators such as youth unemployment would significantly improve and increase confidence in these results. New data on rebel recruitment and organization, key population subgroups, and political and economic stability between episodes of conflict may help substantially advance the literature. Overall, this research is incredibly important and has incredible potential to help policy makers and leaders better plan and prevent the onset of severe civil conflicts all around the world.

Appendix

Conflicts and Battle Deaths

Country	Conflict Start	Total Death
Afghanistan	2003	644842
Algeria	1991	111537
Angola	1998	169900
Angola	1994	3463
Argentina	1974	4702
Azerbaijan	2005	13534
Azerbaijan	1995	133
Bangladesh	1975	1152
Bolivia	1967	82
Bosnia and Herzegovina	1992	44800
Bosnia and Herzegovina	1993	2997
Bosnia and Herzegovina	1993	10998
Burkina Faso	1987	100
Burundi	1991	14485
Cambodia	1978	367625
Cameroon	1984	400500
Central African Republic	2001	1540
Chad	1976	41201
Chile	1973	2095
Colombia	1964	39768
Comoros	1989	27
Comoros	1997	56
Congo	1997	11916
Cote D'Ivoire	2002	1265
Croatia	1995	5500
Cuba	1961	1368
Democratic Republic of Congo (Zaire)	1960	1582
Democratic Republic of Congo (Zaire)	1960	2997
Democratic Republic of Congo (Zaire)	1967	159566
Democratic Republic of Congo (Zaire)	2007	241
Djibouti	1999	765
Dominican Republic	1965	4027
Egypt	1993	918
Ethiopia	1980	24569
El Salvador	1979	55300
Equatorial Guinea	1979	999
Eritrea	1999	344
Ethiopia	1976	16324
Ethiopia	1964	350000
Ethiopia	1994	35640
Ethiopia	1989	5994
Ethiopia	1999	2997
Gabon	1964	30
Gambia	1981	809
Georgia	1991	1313
Georgia	1992	2500
Georgia	2004	1648
Ghana	1981	123
Guatemala	1965	46300
Guinea	2000	1720
Guinea-Bissau	1998	3000
Haiti	1991	1339
India	1990	9478
India	1992	9942
India	1966	1500
India	1992	8923

India	1992	11668
India	1983	23678
India	1989	42249
India	1994	2857
India	1993	2436
India	2008	61
India	2008	33
Indonesia	1976	18500
Indonesia	1992	76250
Indonesia	1999	4540
Iran	1979	38620
Iran	1986	14313
Iran	1979	1998
Iraq	1982	159179
Iraq	1973	397043
Israel	2000	6350
Israel	2006	1736
Kenya	1982	318
Laos	1989	31555
Lebanon	1982	144000
Lesotho	1998	114
Liberia	1989	22166
Macedonia	2001	122
Madagascar	1971	128
Malaysia	1981	356
Malaysia	1963	3996
Mali	1994	397
Mauritania	1975	3996
Mexico	1996	144
Moldova	1992	700
Morocco	1971	264
Morocco	1975	13000
Mozambique	1977	164991
Myanmar	1997	4796

Myanmar	1994	7599
Myanmar	1994	2997
Myanmar	1996	180
Myanmar	1961	90993
Myanmar	1996	2997
Myanmar	1976	33285
Myanmar	1997	999
Nepal	1996	12379
Nicaragua	1981	40000
Niger	1994	400
Niger	1996	89
Niger	1997	1367
Nigeria	1966	20
Nigeria	1967	75000
Nigeria	2004	52
Nigeria	2004	72
Oman	1972	959
Pakistan	1971	250000
Pakistan	2004	9885
Pakistan	1995	12322
Panama	1989	75
Papua New Guinea	1992	389
Paraguay	1989	100
Peru	1982	18890
Philippines	1997	44996
Philippines	1993	105787
Romania	1989	909
Russia (Soviet Union)	1993	193
Russia (Soviet Union)	1999	92151
Russia (Soviet Union)	1999	600
Russia (Soviet Union)	2007	395
Rwanda	1997	24799
Saudi Arabia	1979	269
Senegal	1992	1273

Sierra Leone	1991	14212
Somalia	1982	92534
South Africa	1966	25000
South Africa	1985	7009
Spain	1987	245
Sri Lanka (Ceylon)	1989	2285
Sri Lanka (Ceylon)	2003	76807
Sudan	1963	55000
Sudan	1976	64961
Surinam	1986	200
Syria	1979	28197
Tajikistan	1998	30200
Thailand	1974	8814
Thailand	2003	2067
Togo	1991	380
Trinidad and Tobago	1990	30
Tunisia	1980	999
Turkey/Ottoman Empire	1984	38137
Turkey/Ottoman Empire	2005	151
Uganda	1974	124034
United Kingdom	1998	3149
Uruguay	1972	111
Uzbekistan	1999	303
Venezuela	1982	609
Yemen	1994	7000
Yemen(North)	1980	103997
Yugoslavia (Serbia)	1991	63
Yugoslavia (Serbia)	1991	6000
Yugoslavia (Serbia)	1998	4000
Zimbabwe (Rhodesia)	1973	27000

Onset Summary Statistics

Variable	Obs	Mean	Std.Dev	Min	Max
Conflict Onset	778	.066	.250	0	1
Growth of GDP Per Capita	764	.221	.223	-.860	1.443
Democracy	755	4.169	4.006	0	10
Secondary Education	770	.065	.037	.001	.236
Ln(GDP Per Capita)	764	7.774	1.369	4.792	10.850
Ethnic Fractionalization	771	.412	.265	.004	.925
Average Neighbor Violence	609	3.370	4.461	0	26.600
Ln Population	771	15.570	1.973	9.861	20.956
Africa Dummy	778	.269	.444	0	1
Asia Dummy	778	.201	.401	0	1
ME Dummy	778	.100	.301	0	1
America Dummy	778	.234	.424	0	1
Europe Dummy	778	.197	.398	0	1

Severity Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Battle Deaths	156	21019.1	68712.33	20	627877
Length of Years	156	5.891	7.421	1	45
3rd Party Involvement	156	0.032	0.177	0	1
Peace Years	156	9.705	12.521	0	48
Simultaneous Conflict	156	0.423	0.496	0	1
Fuel and Minerals per Capita	156	7.323	23.443	0	256.329
Ln GDP per Capita	155	6.854	1.152	4.345	9.95
Ln Arms Imports	155	18.384	2.262	13.816	22.456
Ln Population	155	17.158	1.73	12.828	20.792
Ln Young Men	156	-2.012	0.096	-2.248	-1.61
Europe Dummy	156	0.032	0.177	0	1
Africa Dummy	156	0.378	0.487	0	1
Asia Dummy	156	0.301	0.46	0	1
ME Dummy	156	0.16	0.368	0	1
America Dummy	156	0.128	0.335	0	1

Summary Statistics of Deaths for Different Violence Thresholds

Threshold	Obs	Mean	Median	Std. Dev.	Min	Max
25	155	21154.57	1925	68914.16	25	627877
200	116	28238.44	2997	78476.58	200	627877
400	102	32077.36	4019.5	82999.51	400	627877
999	91	35875.02	5998	87153.16	999	627877
10,000	36	85444.28	41008.5	123861.9	10000	627877

Percentage of Conflicts by 5-Year Period and Region

Decade	Conflicts	% Europe	% Mid East	% Asia	% Africa	% America
1960	14	7.14	14.29	21.43	35.71	21.43
1965	15	0.00	13.33	26.67	40.00	20.00
1970	13	15.38	7.69	30.77	23.08	23.08
1975	16	12.50	18.75	25.00	37.50	6.25
1980	9	11.11	11.11	22.22	55.56	0.00
1985	8	0.00	0.00	25.00	37.50	37.50
1990	25	28.00	12.00	16.00	36.00	8.00
1995	11	18.18	0.00	18.18	54.55	9.09
2000	5	20.00	0.00	20.00	60.00	0.00

Table 3-Onset Coefficients

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
GDP Per Capita Growth t-1	-.752	-.727	-.826	-.813	-.558	-.633
Average Democracy Score t-1	-	-	-	-	.208	.123
(Average Democracy Score)^2 t-1	-	-	-	-	-.030	-.022
Secondary Education	-	-	-14.044	-14.316	-	-
Ln GDP Per Capita	-.515	-.456	-	-	-	-
Average Neighbor Violence	-.015	-	-.008	-	-.012	-
Ethnic Fractionalization	1.132	.675	1.091	.838	1.072	1.213
Ln Population	.188	.230	.185	.255	.210	.293
America Dummy	.415	-	.415	-	.497	-
Middle East Dummy	.568	-	.637	-	.403	-
Asia Dummy	-.039	-	.417	-	.503	-
Africa Dummy	-.244	-	.074	-	.438	-
N	677	764	676	763	666	748
Pseudo R^2	**.0747**	**.0923**	**.0620**	**.0817**	**.0593**	**.0725**

Table 5-Onset Coefficients

Variables	(1)	(2)	(3)	(4)
GDP Per Capita Growth t-1	-.735	-.617	-	-
Average Democracy Score t-1	.106	.146	.080	-.092
(Average Democracy Score)^2 t-1	-.023	-.026	-.020	-
Secondary Education Resid	-19.172	-14.930	-18.947	-18.907
GDP Per Capita Resid	-.704	-.559	-.696	-.746
Average Neighbor Violence	-.017	-.011	-	-
Ethnic Fractionalization	.956	.524	-	-
Ln Population	.208	.215	.266	.251
America Dummy	.210	-	-	-
Middle East Dummy	.518	-	-	-
Asia Dummy	-.080	-	-	-
Africa Dummy	-.398	-	-	-
N	665	665	747	747
Pseudo R^2	**.0795**	**.0743**	**.0895**	**.0864**

Table 6- Onset Coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Minimum Threshold	25	25	400	400	1,000	1,000	10,000	10,000
GDP Per Capita Growth t-1	-.810	-	-.201	-	.301	-	1.120	-
Average Democracy Score t-1	-.098	-.092	-.168	-.158	-.171	-.151	-.181	-.165
Secondary Education Resid	-19.130	-18.907	-26.421	-24.100	-.33.105	-30.852	-30.622	-25.712
GDP Per Capita Resid	-.768	-.746	-.811	-.770	-1.087	-1.048	-.998	-.882
Average Neighbor Violence	-.014	-	-.045	-	-.060	-	-.032	-
Ethnic Frac	1.018	-	.612	-	1.125	-	1.310	-
Ln Population	.207	.251	.341	.343	.342	.350	.267	.332
America Dummy	.331	-	.003	-	.598	-	-.152	-
Middle East Dummy	.592	-	.902	-	1.248	-	.912	-
Asia Dummy	-.049	-	.254	-	.619	-	.143	-
Africa Dummy	-.354	-	-.194	-	-.104	-	-.753	-
Countries jointly sig	.6993	-	.7411	-	.6165	-	.6308	-
N	665	747	649	731	645	727	635	717
Pseudo R^2	**.0755**	**.0864**	**.1140**	**.1262**	**.1487**	**.1488**	**.1355**	**.1233**

Table 11- Onset Coefficients

Variables	(1)	(2)	(3)
Length of Conflict	-	-	8.460
Ln of GDP per Capita t-2	-.623	-.575	-1.123
Third Party Involvement Dummy	2.137	2.191	-7.261
Simultaneous Conflict Dummy	1.692	1.666	-10.265
Ln Population t-2	.156	.107	-.558
Ln Arms Imports t-2	.043	.030	.676
Ln Percentage of Men Aged 15-29 5-year periods	.150	.331	3.671
Ln Fuel and Minerals per Capita 5-year periods	.014	.029	.133
Africa Dummy	.183	-	4.635
Asia Dummy	-.077	-	4.369
America Dummy	.662	-	4.532
Middle East Dummy	.429	-	-5.840
Regional Joint Sig	.5921		.4495
N	702	702	702
Adjusted R^2	**.1462**	**.1394**	**.9059**

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