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OPPORTUNITY TO REBEL: THE EFFECTS OF UNEMPLOYMENT COUPLED WITH ETHNIC DIVIDED ON THE ONSET OF CIVIL CONFLICT

by

DAVID R. HAMILTON

Under the Direction of Carrie Manning

ABSTRACT

The effects of unemployment on the genesis of civil conflict are examined as both a social and economic factor, with particular emphasis on civil conflict in ethnically heterogeneous nations. A logit statistical analysis of a data set indicates that increased unemployment rates do contribute to the onset of civil conflict.

INDEX WORDS: Unemployment, Civil conflict, Ethnic dominance

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Science

in the College of Arts & Sciences

Georgia State University

2010

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David R. Hamilton

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by

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August 2010

DEDICATION

I would like to dedicate this work to my parents who have lent me support in this endeavor as they have in every other endeavor I have sought to pursue in my life.

ACKNOWLEDGMENTS

I would like to acknowledge my committee members, Dr. Carrie Manning, Dr. Denise Donnelly, and Dr. Charles Hankla for their support and patience in helping keep me focused and in helping me achieve the project I set out to produce. I would also like to acknowledge my close friends for their patience and support while I worked to complete this project.

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Chapter 1 - Introduction

Numerous civil conflicts exist in today's global environment. In addition to these current conflicts, the after effects of numerous prior conflicts are still felt socially and economically. Civil conflicts, averaging roughly seven years in length, carry tremendous social and economic costs[1] which can take years, even decades, to overcome. Billions of dollars of investment and donation are required to facilitate recovery. With these ever increasing social and economic costs, two factors become increasingly imperative: (1) understanding what factors affect the onset of civil conflict, and (2) how they can be addressed given enough forewarning to prevent the outbreak of conflict. Issues such as levels of economic development, population size & density, government type & strength, and ethnic fractionalization are all linked to the onset of civil conflict.

In this paper I focus on the onset of civil conflict and draw on a large body of economic and social literature discussing the onset of civil conflict in order to generate testable hypotheses regarding the effect of unemployment on civil conflict onset. Unemployment is both a social and an economic factor. While much of the prior literature has tried to separate the two issues, looking for predominantly social or economic reasons for the onset of civil conflict, it is only in some of the most recent literature that a link between the two areas has been studied. I test these hypotheses empirically using a data set I have compiled[2].

One might observe now, at the peak of a global economic crisis, as well as throughout history, a pillar in most political campaigns and policy agendas has been the creation of jobs and the reduction of levels in unemployment. Political and social tensions rise in conjunction with rising unemployment, as increasing numbers of citizens lose their jobs and turn to their government for aid. Correspondingly, increasing stress gets placed on the government as it

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[1] Collier (Collier & Hoeffler, 2004b) reports the average length of civil wars at seven years and the rough economic cost for each at $54 Billion in damages over time on the intrastate and international levels.

[2] The data set contains 184 countries observed annually across a 48 year period from 1960-2007.

attempts to address the issue. If levels of unemployment get too high or are sustained for too long, conflict can occur as people resort to violence and other desperate measures. Conflict may occur between non-governmental groups or against the state as groups lash out in frustration.

In many states or societies unemployment is likely to be an economic factor that can be manipulated by politicians to sway individuals and groups along the conservative/liberal spectrum and pit upper classes versus the lower and working classes. However, in states with ethnically[3] divided populations it has the ability to become an identity based factor. In some states, i.e. Northern Ireland, society and government are divided along lines of ethnic orientation. With the parties controlling government divided by ethnic or religious classification and the population itself divided closely between ethnic groups, unemployment becomes an 'us versus them' issue, rather than a class issue or a conservative/liberal issue which could cut across ethnic groups. In cases such as this, as unemployment levels rise, politicians and social elites may manipulate the issue, turning groups against each other for political gain. While all ethnic groups may be suffering to roughly the same extent, framing of the issue by politicians may create the perception that one group is suffering at the benefit of an alternative group, or that one group is suffering more. This can increase tensions between groups and potentially lead to conflict if unemployment levels get too high. Therefore I argue that unemployment becomes an even more critical factor in areas of ethnic dominance[4].

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[3] In referencing ethnicity, I defer to Horowitz's definition of ethnicity: Ethnic groups are defined by ascriptive differences, whether the indicum is color, appearance, language, religion, some other indicator of common origin, or some combination thereof… This is an inclusive concept of ethnicity [that facilitates] comparison (1985, 17-18).
[4]An area is classified as having a dominant ethnic group or a group is given the classification of ethnic dominance if the population of one group makes up between 45-90% of the overall population (Collier, Hoeffler, & Sambanis, 2005).

In the next chapter I review the prior literature on the occurrence of civil war. In chapter 3, I present a theoretical argument regarding the effects that unemployment and ethnic fractionalization have on the onset of civil conflict. In chapter 4 I describe the data set and discuss the statistical methods utilized in this study. In chapter 5 I present the empirical results, discussing the effects of unemployment on civil conflict, and conclude in chapter 6 with suggestions for the future direction of this research.

Chapter 2 - Literature Review

Foundation Works: *Revolution Theory*

Contemporary analyses of the factors leading to the onset and duration of civil war trace their roots to early social revolution literature which focused on social and economic inequalities as the root causes of political violence and revolution. De Tocqueville's classic hypothesis stated: "Almost all of the revolutions which have changed the aspect of nations have been made to consolidate or to destroy inequality. Remove the secondary causes which have produced the great convulsions of the world and you will almost always find the principle of inequality at the bottom," ([1835] 1961, p. 302). Later works followed the effects social inequality had on revolution and incidents of political violence. Russett (1964) and Nagel (1974) found minor support for the link between political violence and inequality tied to the distribution of land. Nagel (1974) identified the level of economic well being within a state as the most important variable linking the two rather than the distribution of land. Skocpol (1979) evaluated the effects of class inequalities and suppression of the lower classes by the landowning elites and wealthy merchant classes. Despite Nagel's (1974) claim that economic well being was the key link between political violence and inequality, later studies (Sigelman & Simpson, 1977; Hardy, 1979; and Weede, 1981) found that once controlled for, economic development has little affect on income inequality and political violence.

Huntington (1968) focused primarily on the process of modernization within states, but he also drew a link between the rates at which states developed (or modernized) and how stable they remained. He observed that as states experienced increased rates of modernization, they experienced greater likelihoods of destabilization as social institutions were unable to evolve rapidly enough to adequately cope with social demands. He speculated that as social demands failed to be met, groups would lose faith in the state and attempt to remove the government. Most prominent among these groups would be state militaries who took over via coup. While Huntington's focus was primarily on the structure of the state, Gurr (1970) focused on the distribution of income and equality among society within the state. Gurr hypothesized that as the level of inequality of income between groups rose within the state, the potential for political violence would increase. Gurr expanded upon this hypothesis theoretically and historically but did little in the way of quantitative analysis to test his hypothesis, possibly due to the lack of available data on the observed cases.

Rebellion Theory: Resource Mobilization

Shifting away from the focus of economic inequality and its link to revolution and the use of political violence, another body of literature focused on the ability of dissident groups to mobilize through their ability to acquire necessary resources in order to finance and support themselves. Called by some the "resource mobilization school", this body of literature (Gamson, 1975; Jenkins & Perrow, 1977; Tilly, 1975, 1978) casts doubts on the idea of a strong direct relationship between discontent and political violence. Scholars in this school argued that the central explanatory variable was the opportunity of discontent to organize people into effective dissident groups. This argument focused on the ability of dissident groups to acquire and control the necessary resources for the pursuit of collective goods. One key aspect was the structure of

the political environment in which dissident groups formed, i.e. weak vs. strong governments and autocratic vs. democratic regimes.

Eisinger (1973) argued that the more oppressive or closed a political system, the less opportunity there was for dissident groups to engage in collective action of any type. Alternatively, the more open a political system, the lower the likelihood of political violence as dissident groups are able to pursue collective action issues through more peaceful and democratic measures. Political systems falling within the middle range of the autocratic-democratic spectrum, moderately autocratic to moderately democratic, are seen as the most likely to experience civil conflict, primarily as a result of weaknesses in state capacity (ie. weak militaries, inability to enforce laws, and corrupt institutions). Weak autocratic and democratic regimes lack strength to suppress rebellion groups and protests. The nature of the governments are often such that the people view their options as limited only to extreme, often violent, measures in order to change the political climate. While the style of government has social implications, this body of literature viewed it only as an enabler/inhibitor for conflict and focused the basis of the argument on the ability of groups to receive adequate economic backing to mount a rebellion.

This argument received additional statistical backing in more contemporary discussions on the outbreak of civil war (Collier& Hoeffler 2001, 2002a, Sambanis 2001, and Fearon & Laitin, 2003). These researchers showed that, with all other factors controlled for, highly democratic and autocratic governments are unlikely to experience civil conflict, while weak autocratic or democratic governments are more susceptible to civil conflict. Measurement of government strengths and types are taken primarily from the Freedom House[5] and Polity[6]

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[5] www.freedomhouse.org/
[6] www.systemicpeace.org/polity/polity4.htm

indexes. A significant failure in this literature is its lack of discussion on the varying effects that government style can have on identity (ethnic) based civil wars. Primarily, are highly autocratic governments less likely to experience conflict in general or could they be just as susceptible in ethnically dominant states where one ethnic group controls the government and suppresses or oppresses another ethnic group?

Building on the theory of resource mobilization, the focus shifted to the use of econometric models to forecast or predict the onset of civil war in states. Early work on the modeling of the onset of civil war was developed by Grossman (1991, 1999) who derived much of his work from economic theory literature. Grossman, utilizing econometric models, cast rebellion as an industry that generates profit from the looting of local resources. He argued that rebellions are motivated by greed. Thus, so long as there is ample opportunity for profits to be extracted, the likelihood of rebellion formation will be strong. Simply put, merely the presence of lootable resources is necessary for the formation of rebel groups. This argument again suffers the same fault as the earlier research: it only observes rebellion through an economic lens and fails to apply a social filter to the analysis.

Rebellion Theory: Greed vs. Grievance

In contrast, much of the political science literature explains rebellion in terms of motive. Hirshleifer (1995, 2000) presents the argument that the presence of grievances, actual and imagined (or misperceived), present the primary motives for rebellion. These grievances are collectively referred to as identity based issues and can come from ethnic and social divisions within society that generate(sometimes incorrectly) identity based perceptions of inequality, leading to rebellion by groups with the perceived grievance. While Hirshleifer sheds important light on the issues of inequality and identity as they relate to civil conflict, he fails to discuss any

link with previously identified economic factors, or, more explicitly, the importance of opportunity for rebellion, or of factors that make it more feasible.

Stemming from this divide in the argument over the causes of civil war, Collier & Hoeffler (2000, 2001, 2002a, 2002b, and Collier, Hoeffler & Sambanis 2005) attempt to settle the debate through what they present as the "Greed[7] vs. Grievance[8]" model. Utilizing a number of proxies for both greed oriented motivations and grievance oriented motivations, Collier and Hoeffler constructed a series of models to test the competing arguments. In their first model, the greed or opportunity model, they tested the argument for the effects of greed motivated factors in relation to the onset of civil war. In this model they presented a basket of proxy variables for economic opportunity, measuring the cost/benefit ratio of rebel involvement and weighing the potential opportunity cost individuals face in the participation of rebel activities. They briefly mentioned unemployment as a possible economic factor but brushed it under the table with little explanation and instead utilized male secondary schooling as their proxy for measuring opportunity cost to participate in rebel activities.

In the second model they tested for the effects of grievance motivated factors in relation to the onset of civil war such as ethnic fractionalization and openness of government. Following these two models, Collier & Hoeffler tested a series of models combining proxies from the first two models. They found that while the greed model holds only marginally better explanatory power over the grievance model for the onset of civil war, certain elements of the "Grievance" model have significant relationships to the onset of civil war. Opportunity proxies associated with a significant relationship to the onset of civil war are: Primary Commodity exports, Male

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[7] The Greed model focuses on economic incentives and entitlements that would motivate individuals and groups to undertake rebel actions.

[8] The Grievance model focuses on social and political elements that cause discontent and would provide incentive for individuals and groups to undertake rebel actions.

Secondary schooling[9], GDP per capita, and GPD Growth in the prior five year period. Proxies from the grievance model associated with a significant relationship are: Ethnic Fractionalization, and Regime type. Proxies in both models associated with a significant relationship that are classed as neither greed nor grievance are: Peace duration, Population Size, and Geographic dispersion of the population. While still leaving more questions unanswered than answered, these works provide the basis for the emergence of the combined social and economic body of literature.

Shifting away from the greed focus, other branches of the contemporary literature have attempted to disaggregate the types of civil war into classes of ethnic civil wars and economic/opportunity based civil wars or identity and non-identity based wars (Sambanis, 2001; Collier & Sambanis, 2002; Fearon & Laitin, 2003; and Fearon, 2005). This group of literature separates civil wars between those fought over control of local resources (i.e. drugs, diamonds, lumber, oil, and other minerals) and those fought between ethnic and cultural groups for political control of a state or region. Sambanis (2001)[10] notes that ethnic/religious, or identity based, civil wars are significantly and positively correlated with ethnic heterogeneity. Additional support for these findings are presented through various statistical models that analyze the effects of ethnic and cultural fractionalization in relationship to civil war onset in areas with little economic motivation for profit-seeking or greed-based civil wars[11].

Rebellion Theory: Greed & Grievance

While much of the Rebellion Theory literature developing out of Revolution Theory has focused specifically on either economic or social causes for conflict, a small body of literature

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[9] This paper challenges the assumption that Male secondary schooling is a proxy for opportunity for rebellion. I argue here that education is not a necessary deterrent for conflict but instead the presence of employment opportunities that are a necessary deterrent for conflict.
[10] Also see Doyle & Sambanis (2000)
[11] See Fearon & Laitin (2003), Reynal Querol (2002), and Fearon (2005)

has focused on the combined interactions of both. Edward Muller (1985) examined the effects of income inequality and regime repressiveness on the occurrence of political violence. Drawing primarily on Gurr (1970) and Eisinger's (1973) early works, Muller theorized that as income inequality grows within a society the likelihood for conflict increases. Drawing on Eisinger (1973), he added that conflict would be most likely under regimes that fell in the middle of the autocratic-democratic spectrum; highly repressive regimes are able to more effectively manage discontent and highly democratic regimes offer means for discontent to be voiced through means other than violence. Muller found support for his hypothesis, but found diminishing support for the effect of income inequality on political violence in his later time-series data.

The issue of the interplay and influence of social and economic factors on conflict was later examined by Christopher Cramer (2003), who looked at the issue of inequality between groups and how social institutions reinforce these inequalities. Drawing on sociological and economic literature, Cramer theorized that 'categorical inequality' (inequality that is specific to defined groups within society) is a primary cause of conflict. He emphasized that the institutional setup of states and their societies reinforces these inequalities and further increases the likelihood for conflict by leaving social groups little alternative beyond violent conflict in order to improve their situation. Cramer tested this theory through two case studies on Angola and Rwanda. While providing an interesting argument for the link between economic and social factors, Cramer did little but suggest that these factors were linked.

Despite this limitation, Cramer provided a theoretical basis for the work of Bendikt Korf (2005). Korf approached the Greed vs. Grievance nexus and attempted to link the two by focusing on the institutional mechanisms that preserve ethnic entitlements. Korf theorized that in highly divided or heterogeneous societies, ethnic groups which "gain political control will then also enrich themselves economically and share benefits within their own ethnic realms," (p. 202,

2005). As this enrichment occurs, horizontal inequalities between groups in political, economic, and social dimensions will widen, providing the basis for intergroup animosity and conflict. Korf, like Cramer, used case study analysis but presented little beyond anecdotal evidence to support the theory. In addition, Korf only explored the inequality of land rights within a state or region.

Land rights are important in lesser developed or undeveloped states where agriculture and other commodities make up a majority of the economy, but I argue that they are less significant to the majority of individuals in states that are more developed and industrialized. In these states, larger portions of the population are concentrated in urban areas where it is less important whether an individual owns land or property. Instead, the focus is on whether they are able to provide basic necessities for themselves: i.e. food, shelter, and healthcare. In developed societies, the issue of employment, or more specifically unemployment, is a significant factor for the onset of civil conflict. It is a tool which can be politicized and used to mobilize large numbers of individuals with a limited amount of resources. While much analysis has been done in regards to inequality and its effects on civil conflict, only passing attention has been given to unemployment and its effects on civil conflict. Collier, Hoeffler & Sambanis (2005) make mention of unemployment as a contributing factor in the onset of civil conflict but do not operationalize it in any of their greed or grievance models. Beyond their discussion of unemployment, the issue has received no more than a single sentence discussion in any of the other literature. I aim to address this omission.

Chapter 3 - Theory

As noted earlier, I use the case of Northern Ireland to develop a theoretical argument for the effects of unemployment on conflict onset and then test it using a sample of 184 countries. Northern Ireland is a semi-autonomous region that is comprised predominantly of two ethnic

groups: the Catholics and the Protestants[12]. In each of the six counties comprising the region, Protestants constituted a majority of the population and the government was held in the hands of protestant controlled Great Britain. Under Protestant rule, the Protestant community experienced favorable economic and employment opportunity. The Troubles developed out of a civil rights movement by the Catholic community that the British Government responded to with violence. One of the driving elements behind the civil rights movement was the demand for fair employment opportunities and access to jobs. Rising levels of unemployment during the late 1960's made these demands more urgent on the part of the Catholic community, but also made the Protestant community more resistant as they attempted to protect their own well being. While a peaceful civil rights movement was initially undertaken by the Catholic community in order to seek changes from the government, the government's response to protest marches quickly devolved the movement into a violent conflict with groups aligning along ethnic lines. With levels of unemployment high within both the Catholic and Protestant communities, the ranks of paramilitary groups on both sides quickly swelled as individuals had little deterring them from joining. These groups had long been in existence, the IRA predominantly within the Catholic community seeking political change through any means necessary, and Ulster Unionist groups within the Protestant community seeking to protect the six counties of Northern Ireland's union with Britain. It can be claimed that it was the rising levels of unemployment in the late 1960's that gave the paramilitaries on both sides the resource pool they needed to recruit individuals to their cause.

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[12] In the case of Northern Ireland, the designation of Catholic and Protestant is not used as much for religious designation as it is used to differentiate between descendants of the native Irish population (Catholics) and the immigrated population (Protestants) which settled on the island under British colonialism.

Drawing on the theoretical foundations of Collier & Hoeffler's (2001; 2002a; Collier, Hoeffler & Sambanis 2005) opportunity model, coupled with Muller's (1985), Cramer's (2003), and Korf's (2005) models of inequality, I theorize that:

> H_1: *As the net level of unemployment increases (decreases) within a state, the probability for the outbreak of civil conflict will increase (decrease).*

Building from the works of Gurr (1970) and Grossman (1991, 1999), and pulling from Mancur Olson's (1965) theory of collective action, I theorize that as the levels of unemployment rise, the opportunity cost of joining a rebellion decreases. In joining a rebellion, individuals often are faced with the decision to forgo incomes they might receive from alternative endeavors. As discussed by Kalyvas (2006), inclusion in rebel groups often takes or forces individuals from the areas in which they and their families are located. For many individuals the perceived benefits (short- & long-term) of joining a rebel group must be greater than what they might receive otherwise through employment and careers. In cases where employment rates are high, individuals are unlikely to see much financial benefit over alternative, non-violent options in addressing social grievances. In addition, in cases where individuals have families to support, the cost of abandoning current employment and guaranteed income is even greater. However, as unemployment levels rise, increasing numbers of individuals are faced with lower opportunity costs when presented with the opportunity of joining a rebel group. As more and more individuals become unemployed and the prospects for future employment appear non-existent, participation in rebel movements will increase, leading to increased probabilities for the outbreak of civil war.

Collier & Hoeffler (2005) noted that most countries are governed by ethnically dominant majority groups (groups comprising between 45%-90% of the population). In autocratic states (both weak and strong) and in weak democratic states, the power of the state is likely to be held

by the ethnically dominant group, giving little or no opportunity for voice and representation to other ethnic groups. Only highly democratic states are less likely to experience civil conflict as they have political institutions in place to ensure that all groups receive fair representation and have the ability to voice and address grievances in a just and effective manner.

Moreover, I theorize that there is an interactive effect between rising unemployment, ethnic dominance, and the onset of civil conflict. In states with ethnically dominant populations, increases in unemployment will increase horizontal inequality, or increase the perception that one group is suffering while other groups benefit. While preexisting divides may have been present between ethnic groups, these issues are likely to get repressed or overshadowed in times of economic prosperity. As economic shocks occur and unemployment levels rise, underlying cleavages between ethnic communities are likely to become strained. Drawing on Cramer (2003), Korf (2005), and Kalyvas (2006), I present the following hypothesis:

> *H_2: States with ethnically dominant populations will have a lower threshold for unemployment before conflict onset occurs than states without ethnically dominant populations.*

As unemployment rises, neighboring groups identifying with different ethnic backgrounds are likely to place blame for their misfortune on each other[13]. While these "grievances" may in some cases be misperceived, the resulting tensions between groups are likely to rise as unemployment rises, and the outbreak of civil conflict becomes imminent. In the next section I examine the effects of changing levels of unemployment on civil conflict in ethnically dominant states. I will present an empirical model designed to conduct a large N, cross-national time series utilizing the data set I have constructed.

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[13] While there is concern as to how the distribution of unemployment between groups may affect the onset of conflict, data pertaining to this distribution is only available for a select few of the cases observed. Future projects following this one will utilize case study analysis to analyze the distributed affects of unemployment on a handful of the available cases.

Chapter 4 - Methodology

In order to test the above theories, I will employ a cross-sectional time series[14] utilizing a logit regression model in order to determine the probability for the outbreak of civil conflict. A logit model is most applicable in this situation as the dependent variable, the onset of conflict, will be a binary variable. The data set being used for this analysis is a brand new dataset that I have assembled from a variety of already existing datasets. The study will look at 184 countries with data from each year across the time period of 1960-2007. This provides for an initial 8,832 case years of observation before any case drop occurs due to insufficient data or taking into account that not all countries included in the model existed for the entirety of the period observed.

Primary Variables

The dependent variable for all models to be run will be the onset of civil war within a country, coded (0) if no conflict occurred for the country in the observed year, (1) if conflict broke out in the observed year, and (-) if a conflict was observed within a country for a given year but the origin of the conflict occurred in a prior year. Occurrences for the outbreak of civil war are taken directly from the State Failures Project[15]. In some exceptional cases, occurrences of conflict are taken from prior studies conducted by Collier & Hoeffler (2001; 2002a; Collier, Hoeffler & Sambanis 2005). The occurrence of a civil war is defined as an armed conflict between the government and local rebels with the ability to mount some resistance. The violence must kill more than 1,000 individuals between both sides in a year to be classified as a civil war (Sambanis, 2004). In all, there are 171 observations of civil war onset, 7,695 observations of non-occurrence, and 966 dropped observations due to ongoing conflict. These

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[14] See Harris, Richard, and Robert Sollis, *Applied Time Series Modelling and Forecasting* (2003) for information on cross sectional time series analysis.
[15] http://globalpolicy.gmu.edu/pitf/

dropped observations are removed from the regression analysis as this study is concerned with factors affecting the onset of civil conflict and not its duration or termination.

In my model designed to test H_1, unemployment will be the primary independent variable. Unemployment is measured as the percentage of the adult population reported as unemployed for each country year available from 1960-1999. Unemployment is lagged one time period in order to avoid any endogeneity issues. This measure is coded from (0) to (100). This data is taken from the World Development Indicators (WDI)[16] and International Labor Organization's (ILO)[17] data sets. The theoretical expectation is for the coefficient for unemployment to have a positive sign following regression analysis. The unemployment data utilized is the best available for each observation. In some cases, as reported by the WDI and the ILO, unemployment figures are for only the male portion of the population and in other cases it contains male and female unemployment for persons aged 15-64.

To test H_2 I will rerun the model for H_1 but will include a new variable: Ethnic Dominance. This variable will measure whether a country is comprised of an ethnically dominant majority group (groups comprising between 45%-90% of the population). If a country contains an ethnically dominant group, it receives a (1) for the observed year; all other observations receive a (0). In addition, this model will include an interacted variable generated by multiplying unemployment by ethnic dominance to test the interactive effect between the two variables. This model will contain all of the same control variables included in the first model. The theoretical expectation is for the coefficients for both ethnic dominance and unemployment is to have a positive sign following regression analysis. The coefficient for the interacted variable should also be positive to lend support for H_2.

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[16] www.worldbank.org/
[17] www.ilo.org

Control Variables

Natural Log of GDP per Capita (lngdppc): The natural log of GDP per capita is taken for each country year in the observation. GDP per capita values (measured in constant 2005 US$'s) are taken from the Penn World Tables, v. 6.3[18]. GDP per capita is used as a measure of state capacity with the understanding being that as GDP per capita levels increase, state capacity to prevent civil war onset increases thus decreasing the probability for civil war outbreak. These values are logged with the theoretical understanding that increases in GDP per capita produce a diminishing overall increase in state capacity at higher levels than it does at lower levels. The coefficient is expected to have a negative sign following regression analysis.

GDP per Capita Growth$_{t-1}$ (gdppcgrwth_l): The percent increase of GDP per capita, measured from -.63% to 1.67% across all observations, is lagged one time period to observe the affect of growth in the prior year on the occurrence of civil war outbreak in the observed year. This data is taken from the Penn World Tables, v. 6.3. The coefficient is expected to have a negative sign following regression analysis.

Natural Log of Population (lnpop): Population values are taken from the World Development Indicators and from the Penn World Tables, v. 6.3 for each country year and logged. The coefficient is expected to have a positive sign following regression analysis.

Population Dispersion (popdisp): This is an index measure of the dispersion of the population within each country in the observation. This data is taken from Collier & Hoeffler's (2002; 2005) data set. The measure of this index ranges from (0), indicating even distribution of the population across the country, to (1) indicating complete concentration of the population in one area. The coefficient is expected to have a negative sign following regression analysis.

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[18] pwt.econ.upenn.edu

Post Cold War (postcw): This is a dummy variable indicating if the observed country year occurred during the cold war or after the fall of the Soviet Union. Country years 1960 through 1989 receive a zero while years 1990 through 1999 receive a (1). The coefficient is expected to have a negative sign following regression analysis.

Prior Conflict (priorc): This is a dummy variable carried over from use in prior studies by Collier & Hoeffler (2001; 2002a; Collier, Hoeffler & Sambanis 2005), Sambanis 2001, and Fearon & Laitin, 2003. This variable looks at each individual country year and lists a (0) if a conflict has not occurred within the previous ten years and a (1) if a conflict has occurred. This variable is used to account for legacy effects still present following the previous conflict such as inflated unemployment and faltering economies. The above research has found that on average it takes ten years for a country to fully overcome the effects of prior conflict. The coefficient is expected to have a positive sign following regression analysis.

Table 4.1 - Variable Descriptions

Variable	Type	Description
Cwar	DV	Denotes whether a conflict occurred for the observed year
Unemp	IV	Unemployment level for the observed year
etdo4590	IV	Denotes if a country has a group that is ethnically dominant
lngdppc	CV	Natural log of GDP per capita (US $2005)
Lnpop	CV	Natural log of the Population
popgrwth	CV	Population Growth % from the prior year
popdisp	CV	Concentration level of the population
Postcw	CV	Dummy variable noting whether the observed year was after the end of the cold war
Priorc	CV	Dummy Variable noting whether a conflict had occurred within the previous 10 observed years
$polity^2$	CV	Polity IV score squared

Regime Score^2 (polity^2): This variable comes from the Polity IV[19] data set which measures a state's government on a scale from (-10) (completely autocratic) to (+10) (completely democratic). Due to the variable's expectation to produce a parabolic effect, the variable is squared, giving a range from (0) to (100) in order to measure the linear effect of regime type. The coefficient is expected to have a negative sign following regression analysis.

Chapter 5 -Statistical Analysis

Following regression analysis, we are presented with the results in Table 5.1 below. In the first regression model (column 1) we see the results from running a logit analysis against only the control variables as a test to see if the coefficients hold to their predicted directions. It is observed that the Ln of GDPpc, GDP Growth$_{t-1}$, Population Dispersion, Post-Cold war, and the Polity^2 coefficients all show a negative effect as predicted and all of them except Population dispersion come out as statistically significant. In addition, the coefficient for the Ln of Population comes out positive as predicted and is statistically significant. The surprise of the group is that the coefficient for Prior Conflict, which was predicted as having a positive sign, comes out as having a negative sign but is shown as not being statistically significant. This is possibly due to the fact that in all other prior studies, the time series analysis was done in 5 year blocks whereas this study analyzes on an annual basis, giving considerably more observations of the effect of prior conflict on conflict onset. The variables in this group allow for an initial 4,596 observations with 139 occurrences of conflict onset present.

In the second regression model (column 2) we see the results for the model designed to test H_1. Unemployment is added to the initial model run in column 1. The coefficients for the control variables all hold to their same directional effects and Population Dispersion and Prior Conflict continue to be statistically insignificant. The only variable which drops in its level of

[19] www.systemicpeace.org/polity/polity4.htm

significance is GDP growth in the prior period which drops from the 1% level to the 5% level following the addition

of unemployment to the model. The coefficient for Unemployment, the variable of concern in the model, shows a positive sign as predicted and is shown to be statistically significant at the 5% level, giving generous support for H_1. Due to missing unemployment data, observations for this model drop to 1,846 with 31 occurrences of conflict observed. While these numbers are not ideal, this level of case loss is in line with the level of case loss observed in similar studies discussed above

Table 5.1 - Logit Regression Models

Variable	1	2	3	4	5
Unemployment		.072		.077	.155
		(.033)**		(.034)**	(.044)***
Ethnic Dominance			.204	.789	2.089
			(.217)	(.423)*	(.701)***
Unem*Ethnic Dom					-.141
					(.060)**
Ln GDP per capita	-.392	-.712	-.385	-.778	-.816
	(.107)***	(.232)***	(.107)***	(.239)***	(.245)***
(GDP growth)t-1	-0.084	-.061	-.083	-0.056	-0.051
	(.013)***	(.029)**	(0123)***	(.028)**	(.028)*
Ln Population	.301	.428	.294	.478	0.544
	(.075)***	(.145)***	(.074)***	(.153)***	(.163)***
Population Dispersion	-.442	-.893	-.408	-.831	-0.406
	(.598)	(1.181)	(.593)	(1.207)	(1.282)
Post-Cold War	-.554	-.914	-.533	-0.941	-0.952
	(.241)**	(.439)**	(.240)**	(.448)**	(.452)**
Prior Conflict	-.159	-0.463	-0.130	-.629	-0.735
	(.246)	(0.457)	(0.247)	(.476)	(.476)
$Polity^2$	-.026	-0.026	-.026	-.025	-0.025
	(.004)***	(.007)***	(.004)***	(.007)***	(.007)***
N	4596	1846	4511	1803	1803
No. of Wars					
Log Likelihood	-529.17	-120.379	-527.789	-118.242	-115.358

Note: All regressions include a constant, standard errors are in parentheses
*, **, & *** indicates significance at the 10, 5, & 1 % levels, respectively.

and is still able to produce results that give an understanding of how unemployment is affecting conflict onset.

In the final three models, the variable for Ethnic Dominance is added to the logit regression. The third regression model (column 3) displays the results for a model that drops unemployment and adds the variable for ethnic dominance. Once again, the coefficients for the control variables carry the same signs as they have in the prior two models and the significance for each remains the same as they did in the first model. However, while the coefficient for ethnic dominance carries the predicted positive sign, it does not show as statistically significant in this model. The variables in this model allow for 4,511 observations with 139 occurrences of conflict onset. In the fourth regression model (column 4) both Unemployment and Ethnic Dominance variables are added to the logit regression in order to begin testing H_2. Once again, the signs for the coefficients of the control variables remain as they have for the prior three models and the significance levels for the coefficients remain the same as they were in the second model. The coefficient for Unemployment again shows a positive sign and remains statistically significant at the 5% level. The coefficient for ethnic dominance is again positive and for the first time shows statistical significance, for this model at the 10% level, indicating that any observed effect of ethnic dominance on conflict onset is more than just random. This also lends positive support for H_2. Data limitations again drop the number of observations for this model to 1,803 with 31 occurrences of civil conflict onset present.

The final model combines all of the discussed variables in order to fully test H_2, adding the interacted variable of Unemployment & Ethnic Dominance to the fourth model. Once again, the signs for the coefficients of the control variables remain as they have for the prior three models and the significance levels for the coefficients remain the same as they were in the

second model with the exception of GDP growth in the prior period. In this model, the significance level drops to the 10% level. The coefficients for both Unemployment and Ethnic Dominance once again show the predicted signs and both show significance at the 1% level. However, while the coefficient for the interacted variable shows significance at the 5% level; its sign is opposite that predicted by H_2. This result is troubling as it indicates that while unemployment is a significant explanatory variable for conflict onset when an ethnically dominant population is not present, it has no affect when an ethnically dominant population is present. The logit results indicate that when an ethnically dominant population is present, any increase in unemployment is nullified by the interactive affect between unemployment and ethnic dominance; ethnic dominance becomes the primary explanatory factor for conflict onset.

Despite limitations in the number of observations, statistical support is provided for H_1 but support is not shown for H_2. While the coefficient for Unemployment is shown as having the predicted effect in models 2 & 5 and was statistically significant in both, the negative coefficient for the interacted variable invalidates H_2. However, the negative coefficient for the interacted variable indicates the opposite for what is predicted in H_2. The results of the final model indicate that unemployment is still a highly significant factor for the onset of civil conflict, but in areas that contain an ethnically dominant population its effect is nullified. In addition, the traditional variables from past research of Ln GDP per capita, GDP per Capita growth$_{t-1}$, Ln Population, Post-Cold War, and Regime type all remained highly statistically significant and operated in the directions previously predicted. One key point of interest is that Population Dispersion was not statistically significant in any of the models whereas in prior studies[20] it had shown statistical significance up to the 1% level. A probable reason for this change from prior studies could be due in part to the use of annual observations rather than observing five year blocks. On an

[20] See Collier, Hoeffler & Sambanis 2005

annual basis, Population dispersion levels change very little. This lack of change from year to year is likely to have diminished the statistical effect of Population Dispersion on conflict onset. In addition, by observing in five year blocks, if conflict occurs during a period, it is unclear whether the change in population concentrations occurred prior to the conflict or after the onset of the conflict.

Chapter 6 – Conclusion

This study focuses on the issue of civil conflict onset, asking what the effects of unemployment are on the occurrence of civil conflict. It uses a similar research design to the one employed by Collier & Hoeffler (2001; 2002a; Collier, Hoeffler & Sambanis 2005), Sambanis 2001, and Fearon & Laitin, 2003. I challenge the theoretical assumptions proposed in prior studies that attempt to separate the social and economic factors regarding the opportunity for rebellion to occur. This study improves on previous research by applying a new variable, unemployment. My results show that an increase in overall unemployment has a statistically significant effect on the increase in the probability of civil conflict so long as an ethnically dominant population is not present. In addition, this study expands on prior studies by analyzing individual countries on an annual basis rather than looking at averaged data in five year blocks as prior studies have[21]. By observing data in five year averaged blocks, it becomes questionable as to what is driving the data. If the occurrence of conflict onset occurs within the first years of the observed block, any changes in the data that are driving significance levels could be due to the conflict itself. By observing annually, you are able to avoid issues of endogeneity and instead observe the direct effects of the independent variables on the onset of civil conflict. The only true downside to observing on an annual basis is that the data becomes more susceptible

[21] See Collier & Hoeffler (2001; 2002a; Collier, Hoeffler & Sambanis 2005)

to case loss due to missing data. This was a perceivable issue in this study as numerous individual cases were dropped that would have remained in the analysis of a study utilizing five year averaged blocks.

This study also shows that while unemployment remained a statistically significant factor for conflict onset when coupled with ethnic dominance, it had a slightly diminished effect in cases where an ethnically dominant population was present. This went counter to the theory proposed by this paper that the presence of an ethnically dominant population should compound the effect that unemployment has in increasing the likelihood for conflict onset. This finding advances the study of the causes of ethnic and non-ethnic wars by suggesting that both conflicts may have different causes; however, it indicates that the ethnic and non-ethnic conflicts are intertwined.

Where does this leave us? This paper should only be the beginning of the focus on the effects of unemployment on conflict onset. The data here provides a spring board for future research regarding the effect of unemployment on civil conflict but needs to be expanded on drastically. Holes in the data need to be filled and additional variables need to be added to the regression models. A more complete set of data can considerably strengthen my findings. In addition, in-depth case studies evaluating the issue of unemployment in cases of civil conflict are necessary to expand our understanding at the micro-level. As is often the case with large-N studies, macro level data may not always pan out when observed on a case by case basis. Underlying and intervening factors may be causing the effects witnessed at the macro-level and through the utilization of case studies, these factors can be uncovered. With this project I lay open a path for future research to take and further explore.

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