Modeling Civil Wars

Civil wars have been more common throughout recent history than international wars. There are a multitude of variables that may contribute to conditions that may provoke conflicts within states, and these variables must be analyzed differently than models that cause international conflict. To gain a better understanding of what variables may be causal; two theories will be used as guidelines to assess the possible impact each type of variable may have on civil wars. First, the political psychological theory of relative deprivation claims some groups of citizens have expectations about where their status, wealth, or opportunity should be, and when a government is unable to meet their expectations the grievances manifest violence. The second is the rational choice theory. This theory states that civil wars start as an opportunity for gain or loss and are primarily economic.

The first regression will test the theory of relative deprivation. The dependent variable is civil war lag (warl) which assess whether there was a civil war in the previous year. Independent variables that will be tested as causal models include: ethnic fractionalization based on 1964 data (ethfrac); ethnic fractionalization based on 1995 data; and religious fractionalization (relfrac). In addition to these variables dummy variables specifying the location of the plausible conflict were also included. Such locations include: Latin America, Sub-Saharan Africa, Asia and North Africa/Middle East. These variables present plausible causal models of civil wars according to the relative deprivation theory. Ethnic and religious fractionalization creates grounds for a clash of ideals and norms which can be translated to the oppression of one or more of the fractionalized populations. This is more likely to occur in developing or underdeveloped countries. For this reason, the "Western" dummy variable which denotes countries in Western Europe, North America and Japan were omitted from the assessment of regression one. The oppressed populations may feel they are deserving of opportunities restricted to them and create

a violent climate against the commanding ethnicity/governing power.

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         warl |      Coef.   Std. Err.      t    P>|t|     [95% Conf.
Interval]
-------------+------------------------------------------------------------
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    lamerica |   .0536027   .0131922     4.06   0.000     .0277417
.0794637
    ssafrica |   .0408741   .0140871     2.90   0.004     .0132588
.0684895
        asia |   .2185247   .0132632    16.48   0.000     .1925245
.2445249
      nafrme |   .0471711   .0148549     3.18   0.002     .0180507
.0762915
     ethfrac |   .0867558   .0249235     3.48   0.001     .0378975
.1356141
          ef |   .1209126   .0270414     4.47   0.000     .0679026
.1739226
     relfrac |  -.0520961   .0209594    -2.49   0.013    -.0931835   -
.0110087
       _cons |   .0003746   .0116065     0.03   0.974     -.022378
.0231272
Number of Observations=6518
```

The first regression displays causal relationships between all of the variables. It appears that just being a country located in Latin America, Sub-Saharan Africa, Asia or North Africa/Middle East increases the likeliness of a civil war. Also, there is a positive relationship between both assessments of ethnic fractionalization and the likelihood of a civil war. This may suggest that the more ethnically fractionalized a country; the more likely it is to endure a civil war. However, the level of religious fractionalization appeared to have a negative relationship with regard to the likelihood of civil war.

While all of the variables appear to have a causal relationship with civil wars it is unclear which variable may bear the most significance. In order to determine which variable may have the most causal effect on civil wars, the slope of the variable was multiplied by one standard deviation to calculate its typical change.

L. America	(.0536027)(1) =.054
SS Africa	(.0408741)(1) =.041
Asia	(.2185247)(1) = .219
NAFRME	(.0471711)(1) = .048
Ethfrac	(.0867558)(.2853382) = .028
Ef	(.1209126)(.268797) = .033
Relfrac	(-.0520961)(.2186897) = -.011

According to the results of the regression and the calculated typical change, it appears that the most causal variable according to this model is whether or not the country is located in Asia. This could mean that all things considered, citizens of Asian countries may experience a government that has potential to meet their expectations but has failed to do so, resulting in uprising violence and possible civil war. Unfortunately, this model may also be problematic as it seems to be a hasty generalization to claim Asian countries are more susceptible to civil war. This may also suggest that when attempting to model civil wars a pooling problem may be present in which variables may affect other variables a certain way. In this case it is possible that the differences in fractionalization of ethnicity in specific countries when applied to entire regions may have led to skewed results.

The second regression tests the rational choice theory. Because the theory suggests civil wars start because of economic reasons and only when they seem profitable, specific variables have been included to test this theory. Some possible casual models of civil wars include: exports of goods and services (exports); GDP; growth of the country in the last five years (gy1); and lagged democracy (deml), which illustrates whether or not democracy plays a role in rational choice civil wars.

```
       warl |      Coef.   Std. Err.      t    P>|t|     [95% Conf.
Interval]
-------------+------------------------------------------------------------
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     exports |   -.004321   .0007785    -5.55   0.000    -.0058494   -
.0027925
         gdp |  -.0000157   3.70e-06    -4.23   0.000    -.0000229   -
8.38e-06
         gy1 |  -.0127177   .0035871    -3.55   0.000    -.0197604    -
.005675
        deml |   .0700413   .0312437     2.24   0.025     .0086998
.1313827
       _cons |    .330557    .026715    12.37   0.000     .2781068
.3830072
Number of observations= 713
```

Similarly the second regression also shows relationships between all of the variables and civil wars. According to the regression, exports, GDP and growth of the country may appear to decrease the chance of civil wars, while the inability to maintain a certain level of democracy increases the likelihood of a civil war. As in the previous regression, the variables typical change is calculated to determine which of the variables has perhaps the strongest influence on civil wars.

Exports (-.004321)(17.25916) = -.0746

GDP (-.0000157)(4582.515) = -.0719

GY1 (-.0127177)(3.748802) = -.0477

Deml (.0700413)(1) = .07

After calculating the typical change in each of the possible causal variables it appears that GDP and export variables both have a significant relationship decreasing the likelihood of a civil war. In addition lagged democracy also appears to have a comparable positive relationship. This could be inferred as a lack of democracy resulting in social-economic conditions that may spawn civil war.

Finally, both theories seem to exhibit causal relationships according to regression results. It is still unclear which theory best describes the reason for civil wars. Both theories also run together at some points, for instance- the lag of democracy assessed in regression two could also have influence on civil wars according to the relative deprivation theory by creating an undemocratic climate that gives citizens few ways to project their grievances without rioting or resorting to violence. Additionally, it may be inferred that those countries that have a high level of democracy are less likely to have internal conflict because there are other ways besides violence to ensure citizens the ability to police their government (elections, vote of confidence, etc.).

Overall, it may be more beneficial to assess specific areas or regions that are accustomed to civil wars. This was attempted in the first regression, but may have failed because of a potential pooling problem. A pooling problem could have existed where a specific causal variable may have had a different affect on one region than it has on another, but because the regions are grouped the effect can go unnoticed and skew the results of the regression. Other variables that may be useful in additional work modeling civil wars could include data that described major socio-economic conditions of the regions such as literacy rate, infant mortality rate and birth rate. These variables could be used to assess the influence that living conditions and society has on civil wars.