Multi100 Project - Task 02:

Does Warfare Matter? Severity, Duration, and Outcomes of Civil Wars

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21 July 2022

1   Introduction

In this second task, I will conduct an additional analysis using the "Technologies of Rebellion" dataset from Balcells and Kalyvas (2014). The instructions were as follows: "*You should use the 'Technologies of Rebellion' (TR) instead of the 'Peace Research Institute of Oslo' (PRIO) dataset. You should control for: Post 1990, rough terrain, population, GDP per capita, oil exporter, ethnic fractionalization, democracy, military personnel, external support for government, external support for rebels, region.*"

The replication confirms the authors' main claim, that irregular conflicts tend to last longer than conventional and symmetric non-conventional (SNC) civil wars. I use Stata version 15 and R version 4.2.1 to conduct and report the analysis.

2   Analysis

The code below replicates models 4 reported in Table 01 (Balcells and Kalyvas 2014, 1400). My estimates are identical to those included in the main paper.

First, I install the packages required for the analysis.

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```r
# Install necessary packages

r <- getOption("repos")

r["CRAN"] <- "https://cran.rstudio.com/"

options(repos = r)


# List of packages

packages <- c("devtools", "knitr", "rmarkdown")


installed_packages <- packages %in% rownames(installed.packages())

if (any(installed_packages == FALSE)) {

  install.packages(packages[!installed_packages])

}

invisible(lapply(packages, library, character.only = TRUE))


# Install and load Statamarkdown

devtools::install_github("Hemken/Statamarkdown")

library(Statamarkdown)
```

Then I use the authors' Stata script to create some of the variables included in the models. Then, I run a Weibull regression to test the claim that irregular civil wars are more likely to last longer than conventional and non-symmetric civil conflicts. The z-statistic for the variable of interest (`Irregular`) is 2.51 and reaches standard levels of statistical significance. The variable coefficient is 0.869 (SE = 0.346, 95% CI = [0.191, 1.545]). The baseline category is conventional civil wars. The results are available below.

```stata
// Load the dataset
sysuse ../task01/TR_panelformat_Replication.dta


// Create variable warend
sort id year
gen warend=0
```

```stata
replace warend=1 if year==yrend


// Some months have 31 days, others 30, 29, 28.

gen curyear=mdy(moend,31,yrend) if yrend!=. & year==yrend & moend!=.

format %td curyear

replace curyear=mdy(moend,30,yrend) if yrend!=. & year==yrend & moend!=. & curyear==.

replace curyear=mdy(moend,29,yrend) if yrend!=. & year==yrend & moend!=. & curyear==.

replace curyear=mdy(moend,28,yrend) if yrend!=. & year==yrend & moend!=. & curyear==.

replace curyear=date("3112"+string(year),"DMY") if curyear==.


// Create variable warbegin

gen warbegin=0

sort id year

by id: replace warbegin=1 if _n==1


// Create variable origyear

gen origyear=.

format %td origyear

replace origyear=mdy(most,1,yrst) if year==yrst & most!=.

replace origyear=mdy(1,1,yrst) if year==yrst & most==.

replace origyear=date("3112"+string(year-1), "DMY") if year!=yrst


// Set data

stset curyear, id(id) failure(warend==1) time0(origyear) origin(time origyear) ///

scale(30.41667)


// Model 04

streg i.technologyrebellion post1990 lmtnest ///

lpop gdpenl oil ethfrac deml milper Extsupp_gov_bi ///

Extsupp_reb_bi western eeurop asia ssafrica lamerica, ///
```

```
d(w) nolog  vce(robust) time
```

(135 real changes made)

(1,126 missing values generated)

(35 real changes made)

(2 real changes made)

(2 real changes made)

(1,087 real changes made)

(147 real changes made)

(1,206 missing values generated)

(131 real changes made)

(16 real changes made)

(1,059 real changes made)

```
            id:  id
    failure event:  warend == 1
obs. time interval:  (origyear, curyear]
```

```
  exit on or before:  failure

     t for analysis:  (time-origin)/30.41667

             origin:  time origyear


-------------------------------------------------------------------------------

     1,206  total observations

         0  exclusions

-------------------------------------------------------------------------------

     1,206  observations remaining, representing

       147  subjects

       135  failures in single-failure-per-subject data

 13,237.675  total analysis time at risk and under observation

                                        at risk from t =         0

                              earliest observed entry t =         0

                                    last observed exit t =  492.2958



          failure _d:  warend == 1

    analysis time _t:  (curyear-origin)/30.41667

              origin:  time origyear

                  id:  id



Weibull AFT regression


No. of subjects     =           131          Number of obs    =          906

No. of failures     =           104

Time at risk        =  9802.223583

                                             Wald chi2(16)    =       76.43

Log pseudolikelihood =   -195.18854          Prob > chi2      =      0.0000


                                        (Std. Err. adjusted for 131 clusters in id)
```

```
--------------------------------------------------------------------------------
                   |                  Robust
               _t  |     Coef.   Std. Err.      z    P>|z|    [95% Conf. Interval]
-------------------+------------------------------------------------------------
technologyrebellion|
         Irregular |   .868049   .3456335    2.51   0.012    .1906197   1.545478
               SNC |  .5774997   .4547154    1.27   0.204   -.3137261   1.468725
                   |
          post1990 | -.2930918   .3215899   -0.91   0.362   -.9233963   .3372128
           lmtnest |  .1554951   .0994134    1.56   0.118   -.0393516   .3503418
              lpop |  .0773637    .105569    0.73   0.464   -.1295478   .2842751
         gdpenl_fl |  .2938091   .1516979    1.94   0.053   -.0035134   .5911316
            oil_fl | -.1133936   .3515312   -0.32   0.747   -.8023821   .5755949
           ethfrac |  .5641797   .4883649    1.16   0.248   -.3929979   1.521357
              deml |  .1201555   .3710263    0.32   0.746   -.6070427   .8473537
            milper |  .0000139   .0000696    0.20   0.842   -.0001226   .0001503
    Extsupp_gov_bi |  .5362917   .3090616    1.74   0.083    -.069458   1.142041
    Extsupp_reb_bi |  .7395934    .301807    2.45   0.014    .1480625   1.331124
           western |    -.6284   .5737524   -1.10   0.273   -1.752934    .496134
            eeurop | -.2630128   .5017461   -0.52   0.600   -1.246417   .7203914
              asia |  .5034296   .4780022    1.05   0.292   -.4334375   1.440297
          ssafrica |  .4705192   .4778814    0.98   0.325   -.4661111    1.40715
          lamerica |  .2331925   .5420171    0.43   0.667   -.8291415   1.295526
             _cons |   .930519    1.12554    0.83   0.408   -1.275499   3.136537
-------------------+------------------------------------------------------------
             /ln_p |   -.10289    .070159   -1.47   0.143   -.2403991   .0346191
-------------------+------------------------------------------------------------
                 p |  .9022262   .0632993                     .786314   1.035225
               1/p |  1.108369   .0777621                    .9659733   1.271757
--------------------------------------------------------------------------------
```

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3 Session Information

```
sessionInfo()
```

R version 4.2.1 (2022-06-23)

Platform: x86_64-apple-darwin17.0 (64-bit)

Running under: macOS Monterey 12.4

Matrix products: default

BLAS: /Library/Frameworks/R.framework/Versions/4.2/Resources/lib/libRblas.0.dylib

LAPACK: /Library/Frameworks/R.framework/Versions/4.2/Resources/lib/libRlapack.dylib

locale:

[1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8

attached base packages:

[1] stats   graphics grDevices utils

[5] datasets methods   base

other attached packages:

[1] Statamarkdown_0.7.1 knitr_1.39

[3] devtools_2.4.3   usethis_2.1.6

[5] rmarkdown_2.14   nvimcom_0.9-131

loaded via a namespace (and not attached):

 [1] magrittr_2.0.3   pkgload_1.3.0

 [3] R6_2.5.1   rlang_1.0.3

 [5] fastmap_1.1.0   stringr_1.4.0

 [7] tools_4.2.1   pkgbuild_1.3.1

 [9] xfun_0.31   sessioninfo_1.2.2

[11] cli_3.3.0   remotes_2.4.2

```
[13] htmltools_0.5.2   ellipsis_0.3.2
[15] yaml_2.3.5        digest_0.6.29
[17] lifecycle_1.0.1   crayon_1.5.1
[19] processx_3.6.1    purrr_0.3.4
[21] callr_3.7.0       codetools_0.2-18
[23] fs_1.5.2          ps_1.7.1
[25] curl_4.3.2        memoise_2.0.1
[27] glue_1.6.2        cachem_1.0.6
[29] evaluate_0.15     stringi_1.7.6
[31] compiler_4.2.1    prettyunits_1.1.1
```

References

Balcells, L. and Kalyvas, S. N. (2014). Does Warfare Matter? Severity, Duration, and Outcomes of Civil Wars. *Journal of Conflict Resolution*, 58(8):1390–1418.