SAMANTHA J. KANE JIMÉNEZ
(207) 233-8854 • samkanej@gmail.com • linkedin.com/in/samkanej

In the spring of 2020, I investigated the dual causality between African regime types and armed conflict for a seminar on African conflict. I now submit the methodology and results sections to demonstrate my quantitative, analytical, and written skills. I would be happy to provide the full document upon request.

Methodology

Variables

This study investigates the association between conflict and regime type across fifty-three African states between 1960 and 2016 (with insufficient data across all pertinent variables for Cabo Verde, I dropped its cases from the dataset). I thus use country-years as the unit of observation, with each independent state pairing with each year in the dataset to create one of the 3,064 observations across 28 variables. The variables of utmost interest regard measures relating to regime type and conflict.

I operationalize the variable *regime_type* according to Lührmann et. al's four ordinal categories, coding closed autocracies with 0; electoral autocracies, 1; electoral democracies, 2; and liberal democracies, 3. With regard to the dimensions of conflict, the variable *peace* is a binary measure for the presence of peace (coded 1) or the presence of internal armed conflict (coded 0) in a country-year.[1] The variable *severity* is also an ordinal measure of a conflict's intensity, coded 0 for no conflict, 1 for a minor conflict (with fewer than 1,000 battlefield deaths) and 2 for a war (with more than 1,000 battlefield deaths). *Duration* measures the number of years that a conflict spans. *Relapse* is an ordinal indicator for whether a conflict reignited after a period of pause, coded 0 for ongoing conflict years, 1 for a year of relapse, and 2 for no relapse.

Hypotheses and Statistical Models

The existing literature fails to conclude a singular causal direction between conflict and regime type in Africa. I predict that there is dual causality. I predict that each regime type is likely to experience conflict in different ways; likewise, the outcome of a conflict must be different across polities. Relying on 3,064 observations and 16 variables, I produce two sets of models: the first aims to explain four dimensions of conflict based on regime type and the second aims to do so for regime type and polity changes based on conflict indicators. For the conflict models, I create two variants for each: one relies on the continuous measure of regime type to see the overall patterns, while the other presents categorized slopes for each type of regime. All models control for inequality, neopatrimonialism, political instability, population, and time. Extensive missing data for the PCE and GDP-related control variables impeded their inclusion in the full models. I ran separate models to control for GDP indicators and PCE with available cases, finding no significant differences between these and their full-case counterparts.

[1] Lührmann, Lindberg, and Tannenberg.

Model 1: Conflict onset/continuation as a function of regime type in Africa

Given the inverted-U-shape probability curve for conflict onset relative to regime type, I hypothesize the following:

H1a: Closed autocracies decrease the odds of conflict onset.
H1b: Electoral autocracies increase the odds of conflict onset.
H1c: Electoral democracies increase the odds of conflict onset.
H1d: Liberal democracies decrease the odds of conflict onset.

I test this first set of hypotheses with Model 1, which logistically regresses the binary *peace* variable on *regime_type* and controls:

$$Peace = \beta_0 + \beta_1(Regime\ Type) + \beta_2(Regime\ Change) + \beta_3(Resource\ Inequality)^2 + \beta_4(Power\ Inequality) + \beta_5(Clientelism) + \beta_6(Presidentialism) + \beta_7(Coup) + \beta_8(Population) + \beta_9(Males\ 15\ to\ 29\ as\ percent\ of\ population) + \beta_{10}(Year) + \epsilon$$

Model 2: Conflict severity as a function of regime type in Africa

As well, taking into account regime's varying willingness to enlist violent means of repression, I predict:

H2a: Closed autocracies increase the severity of conflict.
H2b: Electoral autocracies largely increase the severity of conflict.
H2c: Electoral democracies moderately increase the severity of conflict.
H2d: Liberal democracies decrease the severity of conflict.

Model 2 is an ordinal least squares regression, used to test this set of hypotheses:

$$Severity = \beta_0 + \beta_1(Regime\ Type) + \beta_2(Regime\ Change) + \beta_3(Resource\ Inequality)^2 + \beta_4(Power\ Inequality) + \beta_5(Clientelism) + \beta_6(Presidentialism) + \beta_7(Coup) + \beta_8(Males\ 15\ to\ 29\ as\ percent\ of\ population) + \beta_9(Year) + \epsilon$$

Model 3: Conflict duration as a function of regime type in Africa

Along those lines, I anticipate that closed autocracies' broader reliance on repression will produce shorter conflicts, whereas democratic governments' aversion to violence lengthens conflicts. For middling regimes, I anticipate that weak state capacity extends their armed conflict. In short:

H3a: Closed autocracies decrease the duration of conflict.
H3b: Electoral autocracies increase the duration of conflict.

H3c: Electoral democracies increase the duration of conflict.
H3d: Liberal democracies increase the duration of conflict.

Model 3 is a multiple linear regression that tests this set of hypotheses:

$$Duration = \beta_0 + \beta_1(Regime\ Type) + \beta_2(Regime\ Change) + \beta_3(Resource\ Inequality)^2 + \beta_4(Power\ Inequality) + \beta_5(Clientelism) + \beta_6(Presidentialism) + \beta_7(Coup) + \beta_8(Population) + \beta_9(Males\ 15\ to\ 29\ as\ percent\ of\ population) + \beta_{10}(Year) + \epsilon$$

Model 4: Conflict relapse as a function of regime type in Africa

I foresee similar mechanisms influencing conflict relapse, with weak state capacity in hybrid regimes increasing the odds of restoking violence and autocracies' use of repression and democracies' tenets of compromise and negotiation reducing relapse odds. In other words:

H4a: Closed autocracies decrease the risk of conflict relapse.
H4b: Electoral autocracies increase the risk of conflict relapse.
H4c: Electoral democracies increase the risk of conflict relapse.
H4d: Liberal democracies decrease the risk of conflict relapse.

Model 4 uses an ordinal least squares regression to test this set of hypotheses:

$$Relapse = \beta_0 + \beta_1(Regime\ Type) + \beta_2(Regime\ Change) + \beta_3(Resource\ Inequality)^2 + \beta_4(Power\ Inequality) + \beta_5(Clientelism) + \beta_6(Presidentialism) + \beta_7(Coup) + \beta_8(Males\ 15\ to\ 29\ as\ percent\ of\ population) + \beta_9(Year) + \epsilon$$

Model 5: Regime change as a function of conflict in Africa

Regarding the opposite causal linkage, I expect conflict to affect regime type as follows:

H5: Conflict increases the likelihood of regime change.
H6: Conflict in autocracies increases the likelihood of democratization.
H7: Conflict in democracies increases the likelihood of democratic breakdown.
H8: Conflict in democracies increases the likelihood of democratic backsliding.

Model 5 is a multiple linear regression model to tests hypotheses five through eight:

$$Regime\ Change = \beta_0 + \beta_1(Peace) + \beta_2(Severity) + \beta_3(Duration) + \beta_4(Relapse) + \beta_5(Resource\ Inequality) + \beta_6(Power\ Inequality) + \beta_7(Clientelism) + \beta_8(Presidentialism) + \beta_9(Coup) + \beta_{10}(Population) + \beta_{11}(Males\ 15\ to\ 29\ as\ percent\ of\ population) + \beta_{12}(Year) + \epsilon$$

Model 6: Regime type as a function of conflict in Africa

Aside from predicted changes in regime type based on conflict indicators, I expect that conflict negatively affects the type of regime. In other words, I expect a greater, overlap between conflict and autocratic regimes than conflict and democratic regimes. To summarize:

H9: There is a positive association between regime type and peace.
H10: There is a negative association between regime type and conflict severity.
H11: There is a negative association between regime type and conflict duration.
H12: There is a negative association between regime type and conflict relapse.

Model 6 is a multiple linear regression to test the above predictions:

$$Regime\ Type = \beta_0 + \beta_1(Peace) + \beta_2(Severity) + \beta_3(Duration) + \beta_4(Relapse) + \beta_5(Resource\ Inequality) + \beta_6(Power\ Inequality) + \beta_7(Clientelism) + \beta_8(Presidentialism) + \beta_9(Coup) + \beta_{10}(Population) + \beta_{11}(Males\ 15\ to\ 29\ as\ percent\ of\ population) + \beta_{12}(Year) + \epsilon$$

Datasets

I create the African Conflict Dataset based on four existing datasets. The ninth version of the Varieties of Democracy provides most of the governance indicators.[2] Particularly, Lührmann, Lindberg and Tannenberg's contribution to the dataset with their Regimes of the World measure defines regime type – one of the central variables in this study.[3] With similar prominence, the Armed Conflict Database supplies important conflict information on which this study hinges: it brings forth historical records of conflict since 1946, including where and when a conflict happened, how long it

[2] Michael Coppedge, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Jan Teorell, David Altman, Michael Bernhard, M. Steven Fish, Adam Glynn, Allen Hicken, Anna Lührmann, Kyle L. Marquardt, Kelly McMann, Pamela Paxton, Daniel Pemstein, Brigitte Seim, Rachel Sigman, Svend-Erik Skaaning, Jeffrey Staton, Steven Wilson, Agnes Cornell, Lisa Gastaldi, Haakon Gjerløw, Nina Ilchenko, Joshua Krusell, Laura Maxwell, Valeriya Mechkova, Juraj Medzihorsky, Josefine Pernes, Johannes von Römer, Natalia Stepanova, Aksel Sundström, Eitan Tzelgov, Yi-ting Wang, Tore Wig, and Daniel Ziblatt, "V-Dem [Country-Year/Country-Date] Dataset v9," *Varieties of Democracy (V-Dem) Project*, (2019), Retrieved from https://doi.org/10.23696/vdemcy19; Daniel Pemstein, Kyle L. Marquardt, Eitan Tzelgov, Yi-ting Wang, Juraj Medzihorsky, Joshua Krusell, Farhad Miri, and Johannes von Römer, "The V-Dem Measurement Model: Latent Variable Analysis for Cross-National and Cross-Temporal Expert-Coded Data," *V-Dem Working Paper No. 21, 4th edition*, (2019), University of Gothenburg: Varieties of Democracy Institute.
[3] Lührmann, Lindberg, and Tannenberg.

lasted, and whether there were intermittent periods of peace.[4] From this information I am able to identify the response variables for the first part of the study. I use the World Development Indicators[5] database to obtain macroeconomic control measures that resonate with important notions from the existing literature.

My dataset merges variables from the aforementioned sources and subsets world data to the African continent. As well, in this data frame, I create a handful of helpful variables. Honing in on conflict conditions, I create a *duration* variable that measures the number of years between the start and end of a conflict. I also expand the *peace* variable to country-years not featured in the Armed Conflict Database; thus, a measure of whether conflict is ongoing is available for every observation. As well, I provide the *lastconfyear* variable, which indicates for every country-year the year in which a given country experienced armed conflict. From *lastconfyear* I produce a *recency* variable, which measures the number of years between an observation and the last year with armed conflict. Furthermore, I yield a *relapse* indicator, coded 0 for ongoing conflict, 1 for country-years that return to armed conflict after a period of reprieve, and 2 for post-conflict country-years that do not experience a relapse into armed conflict. Lastly, I gauge annual changes in the *regime_type_amb* variable –which accounts for a regime's ambiguous stance within one of Lührmann et. al's categorizations– to assemble a *regime_changed* measure, where positive values indicate that a state changed toward democratization from the previous year to the year of observation, and negative values point to democratic backsliding. This variable is continuous on a scale of -9 to 9, and larger absolute values demarcate a larger degree of change. Similarly, I constructed a *regime_will_change* variable, which operates in the same fashion, but compares a year of observation with the following year. This lead version of *regime_change* serves to distinguish whether events in the year of observation contributed to or resulted from a change in regime.

Results

Conflict as a Function of Regime Type

Table 1 summarizes the regression outputs explaining the dimensions of conflict. Most predictors –including control variables– in Models 1 through 4 provide significant results. Despite the large number of significant terms, I regard their roles as legitimate based on their prominence throughout a series of exploratory models, in which overall statistical significance patterns remained somewhat constant, with individual predictors' significance changing depending on the controls included in each of the explorations. Examples of such changes are available in the Appendix. Indeed, each statistically significant indicator contributes meaningful information to the model that other variables do not already take into account.

[4] Nils Petter Gleditsch, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, and Håvard Strand, Armed Conflict 1946-2001: A New Dataset, *Journal of Peace Research 39,* no. 5, (2002), Retrieved from https://ucdp.uu.se/downloads/index.html#armedconflict; Therese Pettersson, Stina Högbladh & Magnus Öberg, Organized violence, 1989-2018 and Peace Agreements, *Journal of Peace Research 56*, no. 4, (2019): 589-603; Therese Pettersson, UCDP/PRIO Armed Conflict Dataset Codebook v 19.1, *Uppsala Conflict Data Program*, (2019), Retrieved from https://ucdp.uu.se/downloads/.

[5] World Bank, and World Bank Group. *World Development Indicators*. Washington, D.C.: World Bank, 2019.

In each model, at least one iteration of the regime type variable significantly contributes to conflict. The continuous regime type measure is significant in every A-model: it is positively associated with peace and relapse and negatively associated with severity and duration. At least one regime type category in each of the B-models is significantly associated with the respective conflict dimension.

Figure 1 displays the continuous effects of regime type on peace, which are significantly positive. Yet, relative to the baseline of closed autocracies, only electoral democracies significantly increase the odds for peace, which counters Hypothesis 1c. With insufficient evidence for Hypotheses 1a, b, and d, I reject the entire first set of predictions.

I also reject the second set of hypotheses based on the significant results from Model 2b, shown in Figure 3. Each degree of separation between a regime and the closed autocracy baseline magnifies a regime's negative effects on severity, as Figure 2 helps visualize. While all non-closed autocratic regime types have a negative association with severity, the effect of electoral autocracies is not as strong as that of electoral democracies (countering Hypotheses 2b and c); the effect of electoral democracies in turn is not nearly as strong as that of liberal democracies (providing evidence against Hypothesis 2d).

Similarly, the results dismantle the third set of hypotheses, which regards conflict duration. Despite the literature's stipulations that democracies tend to extend conflicts, the results suggest the opposite: all regime types, relative to closed autocracies, significantly reduce conflict duration, effectively offering evidence against Hypotheses 3a-d. Figures 4 and 5 visualize these effects. Additionally, conflict relapse is significantly more likely among democratic regimes –both electoral and liberal– as Figures 6 and 7 depict. This evidence

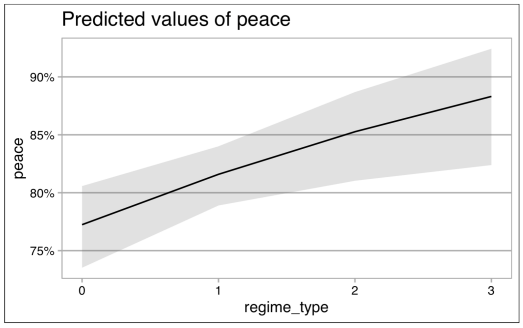

Figure 2. Predicted effects of a continuous regime type measure on peace based on Model 1a.

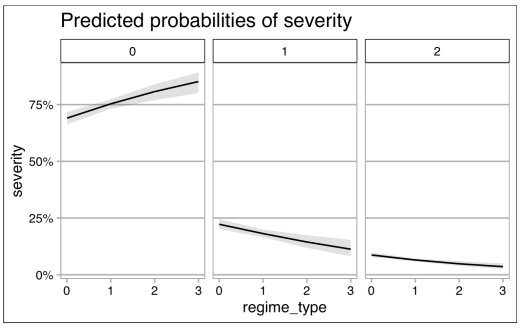

Figure 2. Predicted effects of a continuous regime type measure on conflict severity based on Model 2a.

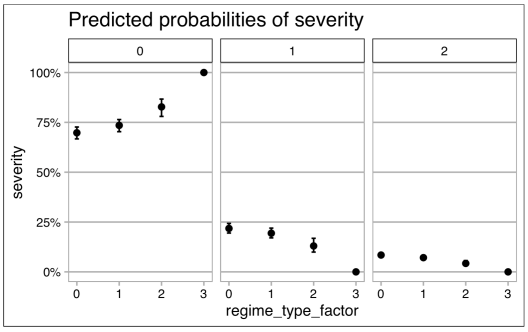

Figure 2. Predicted effects of regime type by category on conflict severity based on Model 2b.

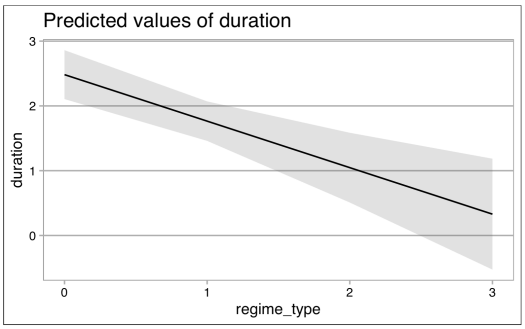

Figure 4. Predicted effects of a continuous regime type measure on conflict duration based on Model 3a.

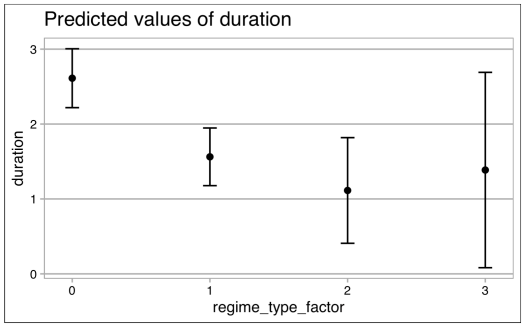

Figure 5. Predicted effects of regime type by category on conflict duration based on Model 3b.

supports Hypothesis 4c but opposes Hypothesis 4d. Negligible effects of closed and electoral autocracies on conflict relapse also lead me to reject Hypotheses 4a and b.

Overall, assessing the role of regime types on conflict dimensions provides evidence that counters all but one hypothesis: Hypothesis 4c. Nonetheless, the wealth of significant indicators remains promising and also points to influential control measures. Compelling control variables include resource and power inequality and clientelism, which significantly increase the odds of peace but also of relapse, while contributing to the decrease of conflict severity and duration. In the opposite direction, yet equally convincing, presidentialism is negatively associated with peace, extends and intensifies conflicts, and increases the odds of relapse. Similarly, over time, conflicts are more likely, more severe, longer, and likelier to reignite after a period of peace. As well, while coups increase conflict and relapse odds and intensify armed conflict, they tend to shorten episodes of unrest.

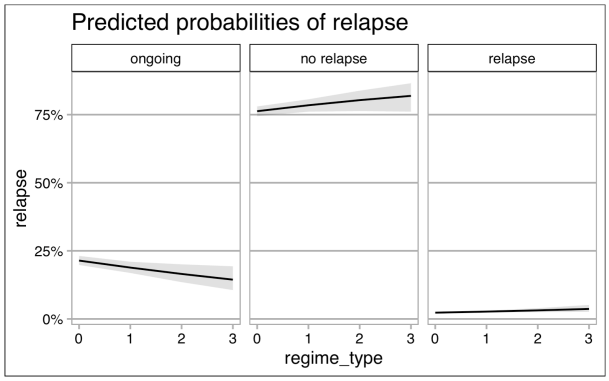

Figure 6. Predicted effects of a continuous regime type measure on conflict relapse based on Model 4a.

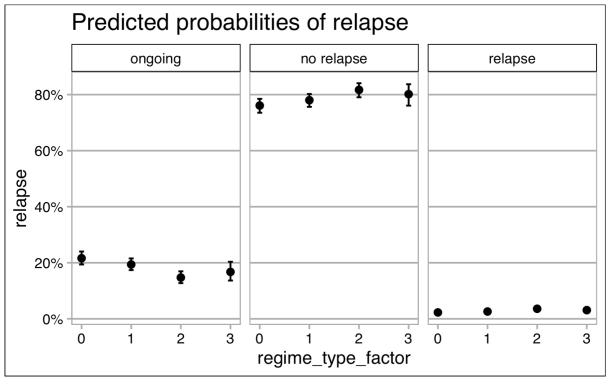

Figure 7. Predicted effects of regime type by category on conflict relapse based on Model 4b.

Surprisingly, regime change plays a significant, negative role only with regard to conflict duration, and only when gauged alongside a continuous operationalization of regime type (Model 3a). The proportion of fighting-aged males and population size also have ambiguous effects across the first set of models.

About half of the total cases lack PCE data, and 189 cases lack GDP data. Nonetheless, I run models with these components and include their regression summaries in the Appendix. Models that control for PCE eliminate the impact of regime type on conflict duration and relapse. Controlling for GDP does not change the effects of the central explanatory variables in any of the models. Full models –with both PCE and GDP controls– resemble the significant associations that the original models that I include in this section elucidate.

	Conflict Dimensions							
	Peace		Severity		Duration		Relapse	
	Continuous (1a)	Ordinal (1b)	Continuous (2a)	Ordinal (2b)	Continuous (3a)	Ordinal (3b)	Continuous (4a)	Ordinal (4b)
Regime Type: cont.	0.267 **		-0.315 ***		-0.050 ***		0.160 **	
Regime Type: Electoral Autocracy		0.136		*-0.183†*		*-1.050 ******		0.137
Regime Type: Electoral Democracy		0.563 *		*-0.732 ******		-1.499 ***		0.469 ***
Regime Type: Liberal Democracy		14.280		*-14.277 ******		-1.224 †		0.316 ***
Regime Changed	-0.031	-0.020	0.028	*0.018*	-0.718 ***	0.125	0.032	0.030
Resource Inequality[2]	2.276 ***	2.252 ***	-3.299 ***	*-3.225 ******	-2.102	*-2.243 ******	1.605 ***	1.664 ***
Power Inequality	1.143 ***	1.154 ***	-0.910 ***	*-0.910 ******	-2.266 ***	*-2.073 ******	1.099 ***	1.039 ***
Clientelism	2.326	2.409 ***	-2.336 ***	*-2.390 ******	-7.500 ***	*-7.307 ******	2.749 ***	2.744 ***
Presidentialism	-2.666 ***	-2.551 ***	2.315 ***	*2.184 ******	6.172 ***	*6.383 ******	-2.190 ***	-2.152 ***
Coup	-0.461 ***	-0.453 ***	0.428 ***	*0.418 ******	-0.007	*-0.005*	0.104	0.110
Population	-2.818e-08 ***	-2.806e-08 ***			6.405e-08 ***	*6.494e-08 ******		
Males 15-29 as % of population	-0.194 **	0.188 **	-0.184 **	*-0.182 **	-0.307 **	-0.310 **	0.104	0.107
Year	-0.004 ***	-0.038 ***	0.047 ***	0.047 ***	0.079 ***	0.079 ***	-0.034	-0.035
Significance Notation:	*p<0.0001 '***'; p<0.001 '**'; p<0.01 '*'; p<0.5 '†'*							

Table 1. Models 1-4, showing the four dimensions of conflict regressed on regime type –both continuous and ordinal– and control variables.

Regimes as a Function of Conflict

Table 2 summarizes the results from Models 5 and 6. With regard to regime type, Model 5 suggests that there is no change in leadership style based on any of the four conflict dimensions. Indeed, the only significant negative prompt for regime change is coup attempts. However, in terms of regime type, conflict does seem to play a significant role in at least one regard: shorter conflicts are significantly associated with more democratic regimes, supporting Hypothesis 11 and rejecting Hypotheses 9, 10, and 12 on the basis of insignificant results.

	Regime	
	Change (5)	Type (6)
Peace: Yes	-0.030	-0.942
Severity: Minor conflict	-0.045	-0.821
Severity: War	0.046	0.239
Duration	0.000	-0.020 **
Relapse: No	NA	NA
Relapse: Yes	-0.076	-0.106
Resource Inequality[2]	-0.059	0.445 *
Power Inequality	0.087	0.633 ***
Clientelism	-0.038	-0.715 ***
Presidentialism	0.010	-4.241 ***
Coup	-0.157 ***	-0.306 ***
Population	0.000	0.000
Males 15-29 as % of population	-0.007	0.115 ***
Year	0.001	0.045 ***
Significance Notation:	*p<0.0001 '***'; p<0.001 '**'; p<0.01 '*'*	

Table 2. Model 5, showing regime change regressed on the four dimensions of conflict and control variables.

Furthermore, there is a broader trend of democratization over time on the Continent. As well, more coup attempts and more robust neopatrimonial structures, on the other hand, contribute to less democratic regime types. And, surprisingly, resource and power inequality hold positive associations with regime type.

Reduced models that consider PCE and GDP indicators with regard to regime type and change deviated minimally from the full models shown in Table 2.