From Cambodia to the Soviet Union:

What Factors Influence the Probability of Death for Members of Totalitarian Regimes?

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Outline

Model Specification

- Main dataset from Matthews 2019
- Dummy variables:
  - Europe, female, military occupation (pre-regime), economist (pre-regime)
- Continuous variables:
  - regime duration, age at regime entrance, tenure inside regime, regime end year (demeaned), two-year average GDP growth (before end of regime)
- Using $\mathbf{x}_i$ being the independent variable vector including coefficient for the ith observation:

$$\mathbb{P}\text{r}[\text{death}_i = 1 \mid \mathbf{x}_i] = \frac{1}{1 + \exp[-\mathbf{x}_i'\beta]}$$

Logistic Regression Results

	Dependent variable:		*Dependent variable:*
	Death Dummy		Death Dummy
Europe Dummy	−1.052	Regime Duration	−0.001
	(0.626)		(0.012)
Female Dummy	−15.502	Age at Regime Entrance	0.010
	(0.376)		(0.018)
Tenure in Regime	0.036	2Y GDP Growth[1]	−0.208
	(0.015)		(0.061)
Economist Dummy	−2.675	Military Dummy	−0.186
	(5.511)		(0.560)
Regime End	0.059	Constant	−2.150
	(0.024)		(1.025)
Observations	721	Log Likelihood	−245.020
McFadden R^2	0.091		

Note: Bootstrap standard errors of coefficients in round brackets.
[1]Two-year GDP growth measured in the last two years of the respective regimes.

Diagnostics

- Variance Inflation Factor:

$$\hat{\sigma}^2_{\hat{\beta}_j} = n^{-1} \left[\frac{1}{1 - R^2_j} \right] \frac{\hat{\sigma}^2_\epsilon}{\hat{\sigma}^2_{\mathbf{X}_j}}$$

Europe Dummy	3.54	Regime Duration	3.97	Female Dummy	1.00
Age at Regime Entrance	1.22	Tenure in Regime	1.15	2Y GDP Growth	4.19
Economist Dummy	1.01	Military Dummy	1.39	Regime End	8.01

Bootstrap

- Often used to remove bias from estimators
  - here: estimate SE's and coefficient vector
- Draw *N* times a sample of size *n* from the original sample with replacement
- Estimate the model separately for all *N* samples
- Empirical bootstrap estimator is then the mean of the respectively estimated coefficient vectors
- Equivalently: standard errors from the *N* estimations per coefficient
- No noteworthy differences to standard logit model results except the SE on the dummy for women

Conclusion

- Model performance could be better
  - data availability is an issue
- Few variables appear to drive most of the marginal effects
- Examples:
  - $\mathbb{P}\text{r}[\text{death}_{\text{Hitler}} = 1 \mid \mathbf{x}_{\text{Hitler}}] = 10.44\%$
  - $\mathbb{P}\text{r}[\text{death}_{\text{Röhm}} = 1 \mid \mathbf{x}_{\text{Röhm}}] = 7.27\%$
  - $\mathbb{P}\text{r}[\text{death}_{\text{Pol Pot}} = 1 \mid \mathbf{x}_{\text{Pol Pot}}] = 31.76\%$
  - $\mathbb{P}\text{r}[\text{death}_{\text{Stalin}} = 1 \mid \mathbf{x}_{\text{Stalin}}] = 32.27\%$
- Good news for female economists from Europe who aspire to be part of a totalitarian regime
  - model predicts that you are very unlikely to die

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