

Appendix

Appendix A: Examples of photographs



Appendix B: Robustness of Results

Study 1

When there are many control variables, one approach has been to first use a variable selection method and then use OLS regression to find the influence of the selected variables on the dependent variable. However, Belloni, Chernozhukov and Hansen¹ (2014) showed that this two-step process is not appropriate. Instead they proposed a three-step process. We conducted our analysis using their three-step approach.

Step 1

Belloni, Chernozhukov, and Hansen (2014) suggest the following when describing the first step of their method, “we select a set of control variables that are useful for predicting the treatment d_i . This step helps to insure validity of post-model-selection-inference by finding control variables that are strongly related to the treatment and thus potentially important confounding factors.”

In the context of the current manuscript d_i (focal predictor variable) is the democracy index. Therefore, in the first step, we performed Least Angle Regression (LAR) (Efron, Hastie, Johnstone, & Tibshirani, 2004), a variable selection method with democracy index as the dependent variable, the control variables (gender of the leader, age of the leader, age square, race of the leader, the number of years the leader was in power when first photograph was taken, GDP, latitude-longitude, life expectancy of the leader’s country, and source of the picture), and their interactions as predictor variables.

Using Freedom House index, the variables selected by LAR were life expectancy and interaction of the leader’s race and life expectancy. When using WorldBank/EIU as the predictor

¹ Belloni, A., Chernozhukov, V., & Hansen, C., (2014). Inference on treatment effects after selection among high-dimensional controls. *The Review of Economic Studies*, 81(2), 608-650.

variable, the variables selected by LAR were GDP, life expectancy, and interaction of the leader's race and life expectancy.

Step 2

Belloni, Chernozhukov, and Hansen (2014) suggest the following as the second step: “....select additional variables by selecting control variables that predict y_i . This step helps to insure that we have captured important elements in the equation of interest, ideally helping keep the residual variance small, as well as providing an additional chance to find important confounds.”

In our manuscript, y_i is age inflation. Following the suggested procedure, we again performed Least Angle Regression with age inflation as the dependent variable, the control variables (gender of the leader, age of the leader, age square, race of the leader, the number of years the leader was in power when first photograph was taken, GDP, latitude-longitude, life expectancy of the leader's country, and source of the picture), and their interactions as predictor variables. As suggested in this regression we did not include our main predictor variable, democracy index. The variable selected by LAR in this step was interaction of life expectancy and source of the picture. This variable was the same across both democracy indices.

Step 3

Finally, for the third step Belloni, Chernozhukov and Hansen (2014) suggest: “....the linear regression of y_i on the treatment d_i and the union of the set of variables selected in the two variable selection steps”. As stated before, y_i is age inflation, d_i is the democracy index, and the union of the set of variables selected in step 1 and 2 contain the life expectancy, interaction of the leader's race and life expectancy, and interaction of life expectancy and source of the picture. We performed linear regression as described in the third step. The results were consistent with the main analysis reported in the manuscript. Using Freedom House index, the intercept was

3.187, $t^2 = 18.10$, $p < 0.0001$) and Freedom House index coefficient was -0.680, ($t = -3.75$, $p = 0.0002$), statistically significant. The negative coefficient, as in the main analysis, indicated that as the Freedom house index moved from 1 to 7, countries becoming less democratic, leader's age inflation decreased. No other control variable influenced age inflation y_i .

Similarly analysis was conducted for the WorldBank/EIU index. The variable selected in prior two steps for this index were GDP, life expectancy, interaction of the leader's race and life expectancy, and interaction of life expectancy and source of the picture. The analysis indicated that the intercept was 3.129, $t = 16.35$, $p < 0.0001$) and democracy index coefficient was 0.805, ($t = 3.72$, $p = 0.0002$), statistically significant. Therefore across both democracy indices we find that using this alternate analysis, as countries became more democratic, leader's age inflation increased.

² The difference in degrees of freedom between the two analyses occurs because in Step 1, the variables selected by LAR includes GDP when using the WorldBank/EIU index but not the Freedom House index. As we mentioned earlier, the GDP data of two countries Taiwan and Libya is not available.