Profesor: Héctor Bahamonde.
e:hibano@utu.fi
w:www.hectorbahamonde.com
Course: OLS.

Residuals

$$y_i \ = \ \beta_0 + \beta_1 x_i \ + \ e_i$$

$$\text{Repression}_i \ = \ \beta_0 + \beta_1 \text{Democracy}_i \ + e_i$$

...let's see how the OLS model, but in matrix form. For simplicity, we will just focus on the first three countries.

$$\begin{bmatrix} -1.6370 \\ -1.3420 \\ 0.5433 \\ \vdots \\ i_N \end{bmatrix}_{y_i} = -0.58566_{\beta 0} - 0.19107_{\beta_1} \begin{bmatrix} 0.6156 \\ 0.9518 \\ -4.9760 \\ \vdots \\ i_N \end{bmatrix}_{x_i} + \begin{bmatrix} -0.9337127 \\ -0.5744742 \\ 0.1781864 \\ \vdots \\ i_N \end{bmatrix}_{\epsilon_i}$$

Since $\hat{y}_i = \beta_0 + \beta_1 \text{Democracy}_i - \epsilon_i$, then it's easy to see that $\epsilon_i = y_i - \hat{y}_i$. Or in simple, the error (ϵ_i) is the difference between the observed y_i and the predicted $\hat{y}_i$. It makes complete sense: it quantifies how "wrong" my model is.