Homework 1

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Exercise 1

b). Citation: Carnegie, Allison, and Nikolay Marinov. 2017. "Foreign Aid, Human Rights, and Democracy Promotion: Evidence from a Natural Experiment." American Journal of Political Science 61 (3):671–83. https://doi.org/10.1111/ajps.12289.

c). The article uses a 2-stage least squares estimator. First stage:

$$\log(ODA)_{i(t-1)} = \gamma_0 + \gamma_1 Colony_{i(t-2)2} + \sum_{k \in K} \gamma_k \mathrm{I}(i = k) + \sum_{j \in J} \gamma_j \mathrm{I}(t = j) + e_{it}$$

where
$\log(ODA)_{i(t-1)}$ is the logged net EU official development assistance, lagged by one year;
$\gamma_1 Colony_{i(t-2)2}$ is an indicator variable for whether or not the country is a former colony of the EU Council presidency in the second 6 months of year $t-2$ (i.e. two-year lag);
$\sum_{k \in K} \gamma_k \mathrm{I}(i = k)$ and $\sum_{j \in J} \gamma_j \mathrm{I}(t = j)$ represent fixed effects for country and year;
e_{it} is the error term.
This equation estimates EU development assistance as a function of whether the aid destination country is a former colony of the country that is presiding over the EU.

Second stage:

$$DV_{it'} = \beta_0 + \beta_1 \log(ODA)_{i(t-1)} + \sum_{k \in K} \beta_k \mathrm{I}(i = k) + \sum_{j \in J} \beta_j \mathrm{I}(t = j) + u_{it}$$

where
$DV_{it'}$ measures rights and democracy for country i in year $t' \geq t$;
u_{it} is the error term.
All other variabes are the same as in the first stage.
This equation measures whether the (logged) EU development assistance is associated with changes in human rights and democracy in the destination country.

d). Overall for the two-stage model, $\gamma_1 Colony_{i(t-2)2}$ (whether a country is a former colony) is the independent (exogenous) variable ($\sum_{k \in K} \gamma_k \mathrm{I}(i = k)$ and $\sum_{j \in J} \gamma_j \mathrm{I}(t = j)$ are fixed effects). $DV_{it'}$ (rights and democracy) is the ultimate dependent (endogenous) variable the model estimates. $\log(ODA)_{i(t-1)}$ (logged EU development assistance) is an intermediate dependent (endogenous) variable, in the first stage process, because, as the authors state, development aid ($\log(ODA)_{i(t-1)}$) is not independent of the rights and democracy ($DV_{it'}$) in the destination country. Hence the two-stage process to solve this endogeneity problem.

e). The model is static (since it measures the dependent variable only at a specific slice in time); linear (because parameter estimate coefficients are linear); and stochastic (as judged by the uncertainty represented by the error terms at both stages).

f). I am not familiar with the mechanics of the two-stage least square estimators and fixed effects, but perhaps one variable the authors could consider in the first-stage estimation is whether the state presiding the EU has a vested foreign policy interest in the development of the country that receives the aid (the ODA variable). Though admitedly this may be hard to quantify, this variable may be useful because an EU state may have a political interest in increasing/decreasing foreign aid to a country even if the latter is not a former colony, e.g. for political leverage. Though I am not sure to what extent this may already be controlled by the fixed effects built into the model (because of lack of prior training).

Exercise 2:

a).

$$Married_t = \beta_0 + \beta_1 age_t + \beta_2 AnticipatedEducationLevel_t + \beta_3 AnticipatedIncome_t +$$
$$\beta_4 SocialConservatism_t + \beta_5 Selectivity_t + \beta_6 SelfEsteem_t +$$
$$\beta_7 age_t * AnticipatedEducationLevel_t + \beta_8 age_t * AnticipatedEducationLevel_t + \beta_9 age_t * AnticipatedIncome_t +$$
$$\beta_1 0 age_t * SocialConservatism_t + \beta_1 1 age_t * Selectivity_t + \beta_1 2 age_t * SelfEsteem_t + \epsilon_t$$

where
$Married$ (Dependent variable, 0 or 1) is measured at time t, since a person's decision to get married may change over time. It measures whether a person decided whether they decided to be married at this time.
Independent variables:
age_t is person's age at time t, continous variable from 0 to infinity.
$AnticipatedEducationLevel_t$ is how much education a persona anticipates they will obtain; discrete and can be measured from 0 to, say 7, depending on how we decide to code and categorize educational attainment (e.g. 2 could be some highschool, 3 could be highschool, and 6 could be college, etc.)
$AnticipatedIncome_t$ is how much a person anticipates (they are thinking at time t) to be making in, say, five years; continuous from 0 to infinity.
$SocialConservatism_t$ is how socially conservative a person is. This could be a function of cultural background, religous practice, etc. This could measured as a continous variable (maybe 0 to infinity?)
$Selectivity_t$ is how picky a person is about whom they may want to marry; could be measured as continous from 0 to infinity (?).
$\beta_6 SelfEsteem_t$ is how much self-esteem a person has. Continous (0 to infinity?).
Variables with beta coefficients from 7 through 12 are interaction terms of the variables above with the age variable. This is because as a person grows older, the impact of these other variables may change depending on the age. For instance, perhaps as one ages, their selectivity may decrease as there may be more societal pressure for an older person to get married. As a result, an older person may be less "selective" than a younger individual.

b). note: If the dependent variable is between 0 and 1, then it may be necessary to adjust the way the independent variabes are measured. Though perhaps the coefficients would take care of that (?).

d).
From all the independent variables listed, I would guess that Social Conservatism would have a major impact, as well as perhaps anticipated education level and age.

e). Social Conservatism can be important because the impact of cultural setting in which a person grows up can have a lasting impact on their social choices for the rest of a person's life. For instance, a person who grows up in a conservative and religious setting may end up being "socially conservative," and may be socially conditioned into wanting to get married.

Anticipated education level may be important because individuals with higher educational attainment (or persons who think they have more education ahead of them) may have more competing career and education priorities, which may lower the likelihood of them deciding to marry.

Age may be significant because, generally, individuals get married younger, perhaps in their 20s and 30s, rather than 40s and 50s or older. So if a person is younger, there may be a higher possibility that they decided to marry.

f).
Assuming the "preliminary test" would entail us not generating our own data (e.g. through a survey instrument), one could access the General Social Survey (GSS) data to see whether a dataset approximate to what we need already exists. We could then see which variables are already readily measured in such as dataset and then try to construct a model approximating the one stated, based on this availible data. This would probably be approximate because, for instance, the "decision to get married" could be approximated with demographic data on the actual current marital stratus of individuals. We could then see if there is

a significant association between any of the indepdendent variables and the “marital status” in the GSS demographic.