

# Final Exam 2020

Costanza Biavaschi

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## Exercise 1 (60 points)

In their paper "Mining and Local Corruption in Africa." published in the American Journal of Political Science in 2017, Knutsen et al. study whether natural resources have adverse effects on political institutions by increasing corruption. This question is partly inspired by their paper.

The authors write: several cross-country studies indicate that dependence on natural resources is related to less democratic regime forms and worse governance institutions and outcomes. (for a recent survey, see Deacon, 2011). In particular, there seems to be a correlation between natural resources and corruption (e.g., Busse and Gröning, 2013). This posited relationship may, for example, stem from natural resource revenues being relatively easy to control and monopolize for political elites (Boix, 2003; Bueno de Mesquita and Smith, 2009), in turn reducing incentives for politicians to provide accountability and transparency. Moreover, high-rent activities such as natural resource production increase the amount of resources available for patronage and unofficial transactions. Hence, one may expect that resource-abundant countries engender a political state that is factional or predatory and distorts the economy in the pursuit of rents" (Auty, 2001, 839).

- (a) "Despite these plausible arguments, scholars increasingly question whether the cross-country correlations undergirding the political resource curse thesis reflect *causal* effects. This growing skepticism is related to an increased awareness of the limitations of traditional cross-country designs for drawing inferences." Referring to the relevant models learned in class, discuss why cross-country studies might fail at pinning down the causal effect of resources on corruption.
- (b) The authors adopt a different approach. They combine a novel, longitudinal data set on large-scale mines, roughly for the period 1984 to 2013 with the data from Afrobarometer, a pan-African, independent, non-partisan research network that measures public attitudes on economic, political, and social matters, over the same time period. They so obtain a panel of 33 countries. Suppose the dependent variable is the log of bribes paid by the respondent  $i$  living in neighborhood  $n$  at time  $t$ , and the independent variable is whether in the neighborhood  $n$  of the respondent  $i$  is located a mine at time  $t$ . They then estimate version of the model:

$$\log(\text{bribe})_{int} = \beta_0 + \beta_1 \text{mine}_{nt} + \alpha_c + \alpha_t + \mathbf{x}'\boldsymbol{\gamma} + u_{int}, \quad (1)$$

where  $\text{bribe}$  is measured in dollars,  $\text{mine}$  is a dummy variable that takes value of one if in neighborhood  $n$  of respondent  $i$  there is a mine at time  $t$ ,  $\alpha_c$  are country fixed effects and  $\alpha_t$  are time fixed effects and  $\mathbf{x}$  a vector of other control variables. Explain what  $\alpha_c$  and  $\alpha_t$  are, and what they capture.

- (c) Table 1 shows results from this analysis. Interpret the results in all three columns.
- (d) A commentator suggests that during the period of interest the global economy did not incur in global crisis that could have affected the mining or the bribing activity. Evaluate this statement with an appropriate test.
- (e) A commentator is worried that neighborhoods within countries where mines are present are substantially different than neighborhoods where mining activity is absent. In addition, these neighborhoods might be subject to very specific developments over time. Does the model in equation 1 account for such differences? If not, how could it be modified to do that?
- (f) A commentator is worried that people might misreport the amount of bribes paid, either due to social stigma or to so called recall bias. Would you be concerned about this?

Table 1: The effect of resources on corruption

|                    | OLS                        | OLS                        | OLS                        |
|--------------------|----------------------------|----------------------------|----------------------------|
|                    | $\log(\text{bribe}_{int})$ | $\log(\text{bribe}_{int})$ | $\log(\text{bribe}_{int})$ |
|                    | (1)                        | (2)                        | (3)                        |
| $\text{mine}_{nt}$ | 0.24<br>(0.06)             | 0.024<br>(0.008)           | 0.015<br>(0.001)           |
| Country f.e.       | No                         | Yes                        | Yes                        |
| Time f.e.          | No                         | No                         | Yes                        |
| R-squared          | 0.01                       | 0.077                      | 0.096                      |
| N                  | 92,762                     | 92,762                     | 92,762                     |

$\log(\text{bribe}_{int})$  indicates the log of the bribes paid, in dollars;  $\text{mine}_{int}$  is a dummy variable that equals one if in neighborhood  $n$  at time  $t$  there is a mine. Time f.e. and country f.e. are time and country fixed effects.

## Question 2 (40 points)

One of the stylized facts in the field of political economy is that central bank independence causes comparatively lower inflation than central bank dependence. However, why that occurs is less well understood. One claim is that, when central banks are not insulated from political pressures, prime ministers and their parties manipulate monetary policy in response to changes in public opinion, especially in response to the public's evaluations of party leaders and of their expression of vote intentions. If this claim is true, then monetary variables should have no relationship with public opinion when central banks are independent. Britain is a good case in which to test this claim because the Bank of England became independent when Labor took power in mid-1997, the country's form of democracy is known for its clarity of responsibility, and it was not constrained by the European monetary system. The analysis is here performed on monthly data of two key variables for the period 1997-2006.

Imagine you estimate the following model:

$i_t = \beta_0 + \beta_1 PM_t + \beta_2 PM_{t-1} + \beta_3 \log(GDP)_t + t + u_t$ , where the variable  $PM_t$  measures the percent of respondents in the Gallup Opinion Survey who are satisfied with the performance of the prime minister;  $i_t$  is the monthly average short-term interest rate used for domestic monetary policy,  $\log(GDP)_t$  is the (log) gross domestic product, and  $t$  represents a time trend. Table 2 shows the results.

- (a) Interpret all the coefficients in column (1).
- (b) Compute the long-run elasticity of the interest rate to public opinions. Next, explain how you would test whether it is statistically significant or not and, if possible, perform the test.
- (c) Explain the consequences of having serially correlated errors and test whether this problem is present in the data.
- (d) Using the information available in the table and any other arguments you think is appropriate, discuss whether you believe that the Bank of England makes independent decisions. Propose alternative or additional

Table 2: The effect of public opinions on monetary policy

|                 | OLS                 | OLS              | OLS                |
|-----------------|---------------------|------------------|--------------------|
|                 | $i_t$               | $\hat{u}_t$      | $\Delta i_t$       |
|                 | (1)                 | (2)              | (3)                |
| $PM_t$          | -0.0339<br>(0.0491) | -                | -                  |
| $PM_{t-1}$      | -0.0097<br>(0.0553) | -                | -                  |
| $\log(GDP)_t$   | 0.5732<br>(0.0631)  | -                | -                  |
| $t$             | 0.0234<br>(0.6198)  | -                | -                  |
| $\hat{u}_{t-1}$ | -                   | 0.489<br>(0.008) | -                  |
| $\hat{i}_{t-1}$ | -                   | -                | 0.2129<br>(0.4567) |
| R-squared       | 0.01                | 0.077            | 0.096              |
| N               | 109                 | 108              | 108                |

$i_t$  is the interest rate,  $PM_t$  is the percent of respondents in the Gallup Opinion Survey who are satisfied with the performance of the prime minister;  $\log(GDP)_t$  is the (log) gross domestic product, and  $t$  represents a time trend.

$\hat{u}_t$  is the residual from column (1).