Introduction to Political Economy 14.770
Problem Set 4

Due date: November 8, 2017.

Question 1:

Consider the Dal Bó and Dal Bó (2011) / Dube and Vargas (2013) model of commodity prices and civil conflict. Assume that country $X$ has two productive sectors, sector 1 and sector 2. Both of these sectors employ two factors of production: capital with a rental price $r$, and labor with a rental price $w$. The productive sectors involve many firms which maximize profits and use technologies characterized by constant returns to scale. The factor endowments in the economy are available in fixed amounts, $K$ and $L$.

Let $y_1$ be the output of sector 1, $y_2$ be the output of sector 2, and let $p$ denote the relative price of good 1 in terms of good 2: $p_1/p_2$.

Government charges a tax rate to capital income resulting in revenue

$$R = \tau \cdot r \cdot K$$

The third sector in the economy is the rent seeking sector. This sector only uses labor ($L_s$) and appropriates a fraction $s(L_s)$ of tax revenue, where $s'(L_s) > 0$, $s''(L_s) < 0$. The total appropriation from rent seeking is divided among those in that sector, which yields a per capita rent of

$$\frac{s(L_s)}{L_s} (\tau \cdot r \cdot K)$$

Denote $a_{iK}$ the capital requirements in the production of good $i$ and similarly denote $a_{iL}$ the labor requirements in the production of good $i$, so that making a unit of good $i$ requires $a_{iK}$ units of capital and $a_{iL}$ units of labor.

1. Write down the equilibrium conditions of the model assuming perfectly competitive markets in the two goods, and assuming that labor earners
can move freely between the productive sectors and the rent seeking sector.

2. Assume that good 1 is more capital intensive than good 2, $a_{1K}/a_{1L} > a_{2K}/a_{2L}$. What is the effect of an increase in the relative price $p$ on the number of people in the rent seeking sector?

3. Now assume that there is a decline in the stock of capital in the economy, $\bar{K}$. What is the equilibrium effect of this capital stock reduction on the number of rent seekers and the production of the two goods? Explain the intuition behind the results.

**Question 2:**

Several recent papers have looked at the relationship between rainfall and conflict risk. In this exercise you will be asked to explore this relationship drawing on the debate between Miguel et al. and Ciccone.


2. Now skim through Miguel’s response (Miguel and Satyanath, 2011). What are their counterarguments?

3. What is your stance on this debate? Is there any other specification you would like to try with the available data?

4. Excessive rain can be harmful for agriculture and for the economy as a whole, if it produces floods. Is this addressed in any of the papers above? How could it be?

5. Can you think of reasons why the exclusion restriction in Miguel et al. would not hold? If you had access to unlimited data, how would you check this?

**References**


