

Problem Set 1

Siyuan Peng

1.

The paper I choose is “Making Moves Matter: Experimental Evidence on Incentivizing Bureaucrats through Performance-Based Postings,” published at American Economic Review.¹ This paper mainly discussed the “incentives of posting staff to better or worse locations” and the author “uses the annual tax revenue growth to evaluate this incentive.”²

The final model to measure this incentive in this paper shows as follows:

$$\log y_{c2} = \alpha + \gamma \log y_{c0} + \beta_1 TREAT_Y1_c + \beta_2 TREAT_Y2_c + \beta_3 TREAT_Y1_c \times TREAT_Y2_c + \epsilon_c$$

“where $\log y_{c2}$ is the revenue for circle c in year 2 (2014), $\log y_{c0}$ is the baseline value of the outcome variable (2012). $TREAT_Y1_c$ is a dummy for having received the treatment in the first year, $TREAT_Y2_c$ is a dummy for receiving the treatment in the second year, and $TREAT_Y1_c \times TREAT_Y2_c$ is a dummy for receiving treatment in both years.”³

In this model, $\log y_{c0}$, $TREAT_Y1_c$, $TREAT_Y2_c$ and $TREAT_Y1_c \times TREAT_Y2_c$ are exogenous. $\log y_{c2}$ is endogenous. It is a static (all variables are fixed in a particular year, like 2014, 2013 or 2012), linear and deterministic.

A variable I think is valuable but the model is missing is the growth rate of GDP. Even though the growth of the tax could be explained by the effort made by the bureaucrat, however, we could not deny the possibility that the economic environment might be thriving in which almost all companies' taxes are growing with the economic trend.

Reference

Khan, Adnan Q., Asim Ijaz Khwaja, and Benjamin A. Olken. 2019. "Making Moves Matter: Experimental Evidence on Incentivizing Bureaucrats through Performance-Based Postings." *American Economic Review*, 109 (1): 237-70.

¹ Khan, Adnan Q., Asim Ijaz Khwaja, and Benjamin A. Olken. 2019. "Making Moves Matter: Experimental Evidence on Incentivizing Bureaucrats through Performance-Based Postings." *American Economic Review*, 109 (1): 237-70.

² Same paper, Abstract, page 237.

³ Same paper, III. Experimental Design and Estimation, page 253

2.

The logistic regression I designed is shown as follows:

$$\text{Marriage} = \begin{cases} 1 & (\text{get married}), \text{ if } p(M) \geq 0.5 \\ 0 & (\text{not get married}), \text{ if } p(M) < 0.5 \end{cases}$$

$$p(M) = \frac{e^{\beta_0 + \beta_1 \text{Age} + \beta_2 \text{Wealth} + \beta_3 \text{parent_marriage_age} + \beta_4 \text{edu}}}{1 + e^{\beta_0 + \beta_1 \text{Age} + \beta_2 \text{Wealth} + \beta_3 \text{parent_marriage_age} + \beta_4 \text{edu}}}$$

The reason why I choose these variables:

Age (Age): Here, we could directly use the age data.

Personal Wealth (Wealth): The wealth includes income, house, cars, etc. The wealth data is somewhat difficult to collect, but we could use person's past income data to predict his or her future income and sum up future income in a reasonable year range, like 5 or 10 years. Then, add on the present value of the house, cars, and other fixed assets.

Parent marriage age (parent_marriage_age): All people are influenced by their parents more or less. Thus, I suspect that there might be a relationship with children's marriage age and their parents' marriage age. Here, we use the average age of parents when they got married.

Educational level (edu): We could divide people into seven different educational levels: primary school, junior high school, senior high school, bachelor, master, PhD and post-doctoral.

From my perspective, the key factors are age and wealth. It is quite straightforward that we should include age in the marriage model because the possibility of getting married might increase with age growth. When we get older, we are more willing to have a stable relationship with our lover and have our kids. What's more, to get married, the couple needs to have some economic foundation. Marriage needs a material basis to support our future life. As for the parent marriage age and educational level, they might not be that important. While we are living in a different time with our parents, the view towards marriage might have changed. Besides, even though the majority of people will choose to get married after finished their study, we have seen more and more people get married while pursuing a higher degree like PhD. Thus, the negative relationship with marriage and educational level might not be that influential.

I choose these four factors based on the related papers and the real-life experience. I think that these variables are more suitable on this model than others are.

We could post a survey to couples (both married and unmarried) in which ask some questions related to the model's variables. For those who have already married, we want to know the status when they just get married. After processing the data (like discounting their wealth to present value), we could use this first-hand dataset to calculate our model and test whether the model's R-squared is desirable or are all variables significant.