Problem Set #1

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Problem 1 Classify a model from a journal.

(a). Bursztyn, Leonardo, et al. "Understanding mechanisms underlying peer effects: Evidence from a field experiment on financial decisions." Econometrica 82.4 (2014): 1273-1301.

(b). The paper identifies two channels of social influence widely studied theoretically in financial decisions, social learning and social utility, by evidence generated from field experiments.

When someone purchases an asset, his peers may also want to purchase it, both because they learn from his choice (social learning) and because his possession of the asset directly affects others utility of owning the same asset (social utility). Authors randomize whether one member of a peer pair who chose to purchase an asset has that choice implemented, thus randomizing his ability to possess the asset. Then, they randomize whether the second member of the pair: (i) receives no information about the first member, or (ii) is informed of the first members desire to purchase the asset and the result of the randomization that deter- mined possession. It allows to estimate the effects of learning plus possession, and learning alone, relative to a (no information) control group.

The results of the field experiments prove statistically and economically significant in both social learning and social utility channels. Besides, a follow-up survey also reveals that the social learning effect is influenced significantly by the sophisticated levels.

(c).

$$Y_i = \alpha + \sum_c \beta_i I_{c,i} + \gamma\prime X_i + \varepsilon_i$$

(d). Exogenous variables: $\alpha, \varepsilon, \gamma\prime. Endogenour variables : Y, I, X$

(e). This model is static. First of all, it doesn't include any time variables. Although in the data generating process, the investors in the experiment group are called in the second stage, the paper assume the two players do not benefit from their communication. It also excludes the data where there is communication. Under this assumption, it is right to model without the time lag between two stages.

This model is linear, because the function form shows linear polynomial.

This model is stochastic, because the function includes stochastic error terms.

(f). The model doesn't consider the variations of the relations between these peers. Given its experiment design, the peers are selected by the recommendations relations. However, these peers may not be true "peers". It would be natural to consider the follow-up sequence in their recommendations, which could reveal their social power rank. The model mixes the differences up in the randomization in the first stage. It could be a interesting point to analyze how the social learning could be influenced by other factors other than sophisticated levels.

Problem 2 Make your own model.

(a).

$$T_i = \alpha + \beta_i t_i + \gamma_i Y_i + \delta_i l_i + \theta_i m_i + \eta_i f_i + \varepsilon_i$$

T is the predicted life span (in years) of the musician. t is the difference between 2017 and his birth year. Y is the average annual income through his life (in million dollars). l is the average life span of his nation in 2017. And m is the type of music he plays, we rank the music types through 1 to 4 based on their speed. f is a dummy variable, representing if the musician is married or not. For the linear form function, I assume ε_i follows normal distribution and data satisfies White Noise Condition.

(d). Among all the factors, those related to his physical situation and mental situation are key to establish our prediction. I use the music type m for estimating his mental condition, and select his income to estimate his physical condition. Other variables are also important for prediction, but not as vital as these two.

(e). To predict one's life span, it is normal to separate the factors into two aspects, mental and physical factors. If we want to analyze one's mental condition, we can look into one's schedule to see how his time is spent. And considering most people spend more time on work comparing with their families, we take the music type to determine his mental conditions. About the physical, we use the income level to estimate his physical conditions. Although too much nutrition could damage one's health, the income level is a good guarantee for their available health resources.

(f) For the preliminary test, it would be ideal to carry out some natural experiments. I would collect a sample data from these departed popular musicians, and put them in my model to see if these parameters shows significant in those natural experiments.