Problem Set #1

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Question1

Part a&b

Hastings, Justine, Ali Hortasu, and Chad Syverson. "Sales Force and Competition in Financial Product Markets: The Case of Mexico's Social Security Privatization." *Econometrica* 85.6 (2017): 1723-1761.

Sales constitutes a major part of the US employment. However, researchers have long questioned what role does salesperson play in the market. Some literature has suggested that sales-force-based marketing creates information asymmetry, hence results in persistent price dispersion, even in highly competitive markets. This paper analyzed "how sales-force-based marketing, prices, and consumer choices interact to shape market outcomes in an imperfectly competitive financial product market" (Hastings et al., 2017, pp. 1724). In particular, the authors exploit the unique administrative data from the social security reform in Mexico (Hastings et al., 2017, pp. 1724).

Part c

The benchmark model depicts each client i's indirect utility from signing with Afore j (a goverment approved management firm) is:

$$u_{ij} = (\alpha_c + \gamma_c w_i) C_{ij} (y_i, b_i, p_j) + \delta_{c,j} + \varepsilon_{ij} \tag{1}$$

Here, i stands for each agent, j stands for each Afore, and c stands for a demographic-by-geographic cell. $\alpha_c + \gamma_c w_i = \lambda_i$ is the cost sensitivity parameter. C_{ij} is the estimated management cost for agent i from Afore j. It depends on the clients expected future wage profile, incoming balance, and js flow and balance fees (Hastings et al., 2017, pp. 1739). $\delta_{c,j}$ is represented by three instrument variables: sales force concentration; concentration of bank branches; and if Afore j is affliated with a bank. These IVs are the noncost factors that might influence an agent's choice to affliate with an Afore.

Part d

Exogenous variables include w_i, $C_{i,j}$, and $\delta_{c,j}$.
Endogenous variables include α_c and γ_c.

Part e

This is a static model.
This is a linear model.
This is a deterministic model.

Part f

The authors have access to a very unique dataset. For each newly transferred account,

it records which sales agent was responsible for signing the account. Therefore, we could consistently match between each worker and each sales manager. Some characteristics of the sales manager might impact the customer's utility, such as experience and gender. It might be intresting to see these factors added to the model.

Question 2
Part a Write down a model of whether someone decides to get married

$$Marry_i = \beta_0 + \beta_1 Salary_i + \beta_2 Age_i + \beta_3 Distance_i + \beta_4 Dating_i + \epsilon_i$$

Part b & c In this model, *Marry* is a binary variable, it equals to 0 if the agent decides not to get married, and equals to 1 if the agent decides to marry. *Salary* is an ordinal variable. It is measured as the centile of the agent's annual salary in nationwide distribution. *Distance* a continuous variable. It is measured as the direct distance between the two persons' living address. *Dating* is another binary variable. It equals to 1 if the agent is in a relationship. This characterizes a data generating process.

Part d What do you think are the key factors that influence this outcome?
The key factors are *Age* and *Dating*.

Part e Why did you decide on those factors and not others?
I believe the four factors above are the most common factors. Plus, they are easy to quantify. The marrying decision is influenced by many factors. It is impossible to include them all in the model. For example, the matching between two people are fundamental in this model, but without a unique dataset, it is hard to quantify the matching between personal attributes.

Part f How could you do a preliminary test whether your factors are significant in real life?
I would run a preliminary test on a training dataset that incorporates real marriage status and other personal information. Many surveys have the required information. For example, the HRS (Health and Retirement Study) is a good source.

References

Hastings, Justine, Ali Hortaçsu, and Chad Syverson, "Sales Force and Competition in Financial Product Markets: The Case of Mexico's Social Security Privatization," *Econometrica*, 2017, *85* (6), 1723–1761.