Problem Set #1

MACS 30100, Dr. Evans

Due Monday, Jan. 8 at 11:30am

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1. Classify a model from a journal (5 points).

(b) Give a detailed citation of the article.

"Consumption Smoothing and Frequency of Benefit Payments of Cash Transfer Programs" , Aguila E., Kapteyn A., and Perez-Arce F., American Economic Review: Papers & Proceedings 2017, 107(5): 430-435

The paper examines how the frequency of benefit payments from two pension programs in Yucatan, Mexico affects consumption smoothing. One program disburses payments monthly while the other program disbursed it bimonthly.

Further, the paper also examines the effect of the two programs on 1) food-availability, (2) health-care use, and (iii) purchase of durable goods

(c) Write down the mathematical or statistical model (write the equations).

For examining the impact of the two programs on consumption smoothing, researchers studied if the number of days since the last benefit payment affect expenditures. Paper estimated the following equation for both monthly and bimonthly payments.

$Y_{it} = \alpha + \beta D_{it} + w_t + \delta X_{it} + \varepsilon_{it}$

Here, Y_{it} is expenditure on food and beverages at home and outside of home for household i, at wave t = W2 or W3. W 2 and W3 represents the follow-up surveys after the baseline survey W 1. α is a constant, D_{it} is the number of days elapsed since the last disbursement, w_t is a dummy variable for wave, X_{it} includes demographic and socioeconomic characteristics (age, age squared, gender, marital status, years of education, lives alone, and household size), and ε_{it} is a household error term.

For analyzing the effects of the two programs between W 1 and W3 on outcomes paper uses intention-to-treat (ITT) differences-in-differences (DID) regressions:

$Y_{it} = \alpha_0 + w_t + \alpha_1 P + \alpha_2 (w \times P) + \delta X_{it} + \varepsilon_{it}$

Here Y_{it} is the outcome of interest for individual I in wave t, w_t is a dummy variable for wave W3 and W1, P is a program dummy (monthly 1 , bimonthly = 0), and X_{it} includes the same demographic and socio-economic characteristics as above.

(d) List which variables are exogenous (determined outside the model, assumed)

and which variables are endogenous (determined inside the model,

the output of the model)

Exogenous variables

Equation 1: Number of days since the last payment i.e. D_{it}, W dummy for wave, and demographic and socio-economic characteristics i.e. X_{it}

Equation 2: W dummy for wave, and demographic and socio-economic characteristics i.e. X_{it}, and type of program—monthly or bimonthly i.e. P

Endogenous variables

Equation 1: Expenditure on food and beverages at home and outside of home

Equation 2: 1) food-availability, (2) health-care use, and (iii) purchase of durable goods

(e) Classify the model as static vs. dynamic, linear vs. nonlinear, deterministic

vs. stochastic.

Static, linear, deterministic model

(f) List a variable or feature that you think the model is missing that might be valuable.

Consumption smoothing is correlated with people's decision to save in the present keeping in mind the future uncertainty. Given this, the fact that the households receiving bimonthly payments invested in durable goods could be indicator of insurance through the resale value of these goods. Perhaps, inquiring about people's decision in the survey conducted by the researchers could have provided more insights into different results for the two groups of payments and better understanding of consumption smoothing.

2. Make your own model (5 points).

(a) Write down a model of whether someone decides to get married.

$Y = a + B_1D + B_2C + B_3Age + B_4I + B_5S + B_6G$

D = Length of dating/relationship

C = Social/cultural norms around marriage

I = Financial Independence

S = Sexual Orientation

a = constant

Y = married = 1/not married = 0

(d) What do you think are the key factors that influence this outcome?

Listed above

(e) Why did you decide on those factors and not others?

D i.e. length of dating/relationship is important assuming the longer a couple spends time dating and knowing, the more likely they are to get married. Here, I did not include a separate variable for dating

itself as this can be captured in length of dating being 0 as not dating while non-zero positive value as dating.

Social/cultural norms around marriage is important because we tend to abide by the social norms as much as possible. In more conservative cultures the only acceptable or appropriate way for couples to be together is through marriage while in more open cultures couple staying without getting married is totally acceptable. Thus, I assumed people in more conservative cultures are more likely to get married than in more open cultures.

Financial Independence—i.e. when two people have enough resources to live independently, they are more likely to get married. However, this could be highly correlated by Age variable

Sexual Orientation—given the laws and culture norms around the world, homosexual couples are less likely to get married. This too could be correlated to the cultural/social norms variable

(f) How could you do a preliminary test whether your factors are significant

in real life?

As a preliminary test, I would start by collecting data for both exogenous and endogenous variables in my equation/model. After which by running a simple linear regression model to determine if these variables have a statistically significant impact on individual's marital status.

However, it might be difficult to collect data for variables like social/cultural norms. Probably using data on relevant laws can be a good proxy for this. Similarly, data on sexual orientation might not be accurate. People might not be forthright in stating their orientation.