Problem Set #[1]

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Problem 1

(a). The model that I found is a statistical model in the article: How financial incentives induce disability insurance recipients to return to work.

(b). Kostol, Andreas Ravndal, and Magne Mogstad. "How financial incentives induce disability insurance recipients to return to work." American Economic Review 104.2 (2014): 624-55.

(c).

This is a statistical model, a sharp RD design providing a transparent way of showing how the program impact is identified.

In the sharp RD design, assignment to the return-to-work program is a deterministic function of the assignment variable, the date of the DI award (X): only recipients who had been awarded DI before January 1 of 2004 were eligible for the return-to-work program. The RD design uses separate regressions on each side of this cutoff date (c). The regression model for the treatment group is applied to the left side of the cutoff date (X < c)

(1) $Y = \alpha_l + f_l(c - X) + \varepsilon_l$,

whereas the regression model for the control group is applied to the right side of the cutoff date (X > c)

(2) $Y = \alpha_r + f_r(X - c) + \varepsilon_r$,

where f_r and f_l are unknown functional forms. The RD estimate of the return-to-work program is then given by the difference between the estimated regression intercepts on the two sides of the cutoff date

(3) $\hat{\tau}^{RD} = \hat{\alpha}_l - \hat{\alpha}_r$

(d).

Exogenous: Y, X, c

Endogenous: $\hat{\tau}^{RD}$, $\hat{\alpha}_l$, $\hat{\alpha}_r$

(e).

This model is a static model because this model is time-invariant

This model is a non-linear model.

This model is a deterministic model because it doesn't include random variables.

(f).

I think the model misses a variable of age which might have an effect on labor force participation and earning.

Problem 2

$$\Pr(Y = 1|X) = G(\beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + \beta_5 X5 + \beta_6 X6)$$

Y is the binary dependent endogenous variable. 1 = married. 0 = not get married.

- X1 indicates the difference between the individual's age and the legal age of marriage.
- X2 indicates the sexual orientation of the individual, X2 = 1 if the individual is heterosexual and X2 = 0 if not.
- X3 indicates the individual's wealth.
- X4 indicates the individual's education level. X4 = 1 if the individual holds at least a bachelor's degree, X4 = 0 if not.
- X5 indicates whether the country is developed country or developing country. X5 = 1 if it is developing country, X5 = 0 if it is developed country.
- X6 indicates the individual's relationship status. If the individual does not have a boyfriend or girlfriend right now, X6 = 0. If the individual is not satisfied with her current relationship, X6 = 0. If the individual is satisfied with her current relationship, X6 = 1.

Age, education, wealth and relationship status may be the key factors that influence the outcome.

My reasons for deciding on these factors are as following:
The individual's relationship status has direct influence on whether they decide to get married or not. The individual's age, education level, wealth and sexual orientation may also influence their decision to get married. Whether the country is developing or developed is statistically relevant to the average age when people firstly get married.

I will design a survey and ask participants to anonymously report their information listed as exogenous variables above. Also, participants will be asked whether they plan to get married recently. Then I will do a regression on the survey data to see whether the factors are significant.